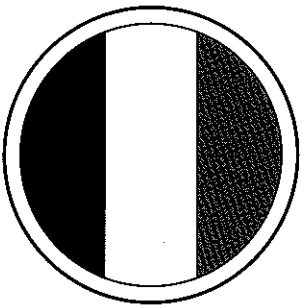
TRADOC
HISTORICAL
MONOGRAPH
SERIES

THE NATIONAL TRAINING CENTER MATURES 1985-1993



By Anne W. Chapman

Military History Office
United States Army Training and Doctrine Command
Fort Monroe, Virginia

1997

U. S. ARMY TRAINING AND DOCTRINE COMMAND

General William W. Hartzog — Commander
Major General James J. Cravens, Jr. — Chief of Staff
Dr. James T. Stensvaag — Chief Historian
Mr. John L. Romjue — Chief, Historical Studies and Publication

Library of Congress Cataloging-in-Publication Data

Chapman, Anne W.
The National Training Center matures : 1985-1993 / by Anne W. Chapman.
p. cm. -- (TRADOC historical monograph series)
Includes bibliographical references (p.) and index.
1. United States. Dept. of the Army. National Training Center--History. 2. Military training camps--California--Fort Irwin--History. I. Title. II. Series.
UA26.F665C43 1997
355.5'0973--dc21

97-24296
CIP

TRADOC HISTORICAL MONOGRAPH SERIES
James T. Stensvaag and John L. Romjue, General Editors

TRADOC Historical Monographs are published by the Military History Office, U.S. Army Training and Doctrine Command. These studies of training and leader development, and doctrinal and combat developments subjects provide historical perspective to support the Command's mission of preparing the Army for war and charting its future.

Contents

Foreword ix
Author's Preface xi

Introduction 1

Chapter I - The Evolving Basis of the National Training Center .. 9
The Futures Concept and the Operations Concept 10
More Training Centers and a Master Plan 14
Army and Forces Command Regulations 350-50 23
Personnel Issues 26
The Leader Development Program 29
Organizational Changes—1985-1993 30

Chapter II - The Focus of Training 35
The "Brigade Level" Controversy 35
The Heavy/Light Controversy 41
Light/Heavy Force Training and Contingency Operations 59
Motorized Rotations 62
The Focus on Unit Learning 64

Chapter III - The Fort Irwin Expansion Effort 65
Introduction 65
The Desert Tortoise Problem 69
The Military Use of Public Lands Debate in Congress 81
The Legislative Story 94

Chapter IV - A National Training Center Rotation—In Garrison .. 99
Introduction 99
Fort Irwin 101
The Question of Prepositioned Equipment 108
Instrumentation Initialization 119

Chapter V - A National Training Center Rotation—In the Field ... 127
The Framework ... 127
The Weapons of the NTC ... 136
Tactical Engagement Simulation—NTC Style ... 155
The Opposing Force ... 156
MILES and the Problem of Indirect Fire ... 177
The Instrumentation System Upgrade ... 195
Live-Fire Exercises ... 200
Other Enhancements to Training ... 205
Casualty Evacuation ... 206
Smoke, Mines, and Obstacles ... 208
The Radio Networks ... 211
Supply ... 212
After Action Reports, Observer/Controllers, and Take Home Packages ... 218

Chapter VI - Reserve Component Units at the National Training Center ... 227
The Total Army Concept ... 228
The NTC and National Guard Retention Patterns ... 230
Roundout Battalions and the Early NTC Experience ... 233
The Roundouts, the Persian Gulf War, and the NTC ... 237
Other U.S. Army Reserve and National Guard Training at the NTC ... 248

Chapter VII - Air Warrior ... 251
The Early Years ... 251
Joint Operations at the NTC ... 254
The Instrumentation Issue ... 258

Chapter VIII - Data Analysis and Lessons Learned II ... 269
Data Collection and Lessons Learned ... 269
Take Home Packages ... 277
The Battlefield Operating Systems and Lessons Learned ... 281
Command and Control ... 281
Maneuver ... 286
Intelligence ... 289
Fire Support ... 293

Air Defense Artillery 295
Mobility and Survivability 296
Combat Service Support 300

Epilogue 307

Appendix: Task Force Deliberate Attack 315

List of Acronyms and Abbreviations 333
Selected Bibliography 335
Index 346
Author Note 359

Tables

1. Soviet Weapon Systems and Equipment Replicated at NTC 166

Charts

1. Combat Training Centers—Program Requirements 19
2. Heavy and Light Brigades 47
3. 177th Armored Brigade Organization 157
4. National Training Center OPFOR M551 Vismods 165
5. CATIES Indirect Fire Simulation 185
6. SAWE-RF Indirect Fire Simulation 193
7. Logpack Layout 215

Maps

1. The Mojave Area and Fort Irwin 3
2. Desert Tortoise Population Sites on Fort Irwin 74
3. Proposed Land Acquisition Areas 79
4. Major Features of the U.S. Army National Training Center 104
5. "Dust Bowl" Area—Fort Irwin 121
6. Integrated Instrumentation Checkpoint "Desert Shade" 124

Illustrations

7th Infantry Division soldiers prepare M119 howitzer 45
Firing the M72 light antitank weapon 48
Mortar crew with 81-mm. mortar 49
82d Airborne Division soldier with M-60 machine gun 57
The desert tortoise 68
Tortoise under armor 71
Desert tortoise, dug in 72
Painted rocks at entrance to Fort Irwin 103
Bradley crewman awaiting action in Fort Irwin "Dust Bowl" 107
A Fort Irwin coyote 108
Unit equipment unloading at Manix railhead 109
The busy Manix rail siding and deployment vehicles 110
Line of vehicles at the Interstate 15 underpass 111
Mishap at the Manix railhead. M88 recovery vehicles hoist an overturned M577 command post vehicle 112
UH-1 helicopter visually modified as Soviet HIND 128
"Killed" vehicle of the 3d ACR with reversed turret 129
Avoiding "LID" ("lost in desert") 132
Column of armored VISMODs 135
The mechanized infantry-armor team 136
First version of the Abrams tank, the M1 with 105mm. main gun 137
BLUFOR Bradley Fighting Vehicles lead Abrams tanks 138
The Bradley Fighting Vehicle 138
M1A1 Abrams main battle tank 139
M1A2 Abrams main battle tank 139
AH-64 Apache helicopter at forward area rearm-refuel point 141
CH-47D Chinook helicopter supports BLUFOR engineers 142
M109 155-mm. self-propelled howitzer 144
The Multiple Launch Rocket System 145
M109A3 SP howitzer and M54A ammo resupply vehicle 146
M29 81-mm. mortar crew preparing to defend 148
HMMWV vehicle "vismoded" as BRDM reconnaissance vehicle 150
M998 HMMWV with mounted TOW missile 150
HEMMT logistics prime mover 152
Armored Vehicle Launched Bridge spanning antitank ditch 153

M16 rifle with MILES 154
An OPFOR soldier 158
ZSU-23-4 SP AA gun as modified from M551 Sheridan 163
Sheridan "vismoded" as 2S1 122-mm. SP howitzer 164
OPFOR HIND-D helicopter modified from UH-1 Huey 167
Soviet 122 mm. self-propelled howitzer deploys 168
Soviet MT-LB vehicle 169
T-72 and T-80 Soviet tank "vismods" 170
Soviet BMP as visually modified from M113 APC 172
M551 Sheridan tanks modified to resemble T-72s and BMPs 173
Sheridan tank modified as T-72 Soviet tank 176
MILES-equipped soldiers 178
"Kill" light on OPFOR BMP vehicle 179
Repairing the M1 tank 180
Strobe light hit/kill indicators on BLUFOR vehicles 181
MILES equipment in readiness 183
"CATIES" indirect-fire and chemical contamination simulation 186/187
M1 Abrams main battle tank firing 202
Simulated fire devices on the M1A1 202
The M981 Fire Integration Support Team Vehicle--"FIST-V" 203
Abrams tank, dug in 203
A dug-in M60A3 tank 204
Live fire exercises against pop-up targets at Drinkwater Lake 204
M113 ambulance 207
M1A1 tank with mine plow 208
Soldier wearing protective equipment 210
Live-fire after action review for a tank platoon 218
After action review in the field 219
NTC observer/controllers reviewing a BLUFOR platoon 220
BLUFOR vehicles maneuver near Whale Gap at the end of a battle 224
Mechanized infantry troops of the Georgia National Guard 241
Planning the battle at the tactical operations center 282
Command and control vehicle 285
3d ACR Bradley communicating enemy location 287
Bradley Fighting Vehicle and main battle tanks 288
The Armored Combat Earthmover 298
Dug-in M1 main battle tank with Hoffman charges 299

Field replacement of an M1 tank power pack 301
M557 medical aid station with casualties 302/303
BLUFOR resupply between missions 304
The OPFOR's ZSU-23-4, a visually modified M551 316
Soviet MT-LBs simulating SA-13 air defense systems 317
M551 Sheridans modified as T-72 tanks and BMPs 317
UH-1 helicopter modified as Soviet HIND gunship 319
Surrogate BMP with simulated armament 321
The dreaded Soviet BMP 326
Bogged-down BLUFOR Bradley Fighting Vehicle 327

Cover photo: M1A1 Abrams main battle tank silhouetted against sunset at Fort Irwin, California (Greg Stewart)

Photographs in this book courtesy Greg Stewart, Laguna Beach, Calif., excepting p. 224 (official U.S. Army photo)

Foreword

No single training reform since World War II has had so profound an impact on the readiness of the United States Army's fighting battalions as has the National Training Center at Fort Irwin, California. Established in 1980, the National Training Center introduced to Army units an unprecedented combat realism under rigorous, spartan field conditions by staging force-on-force mock battle through laser-simulated fire and near-real-time location, communications, and casualty assessment instrumentation. The outstanding record that our Army set in Desert Storm was built on our experience at the National Training Center and at the other heavy, light, and battle-command Combat Training Centers it spawned.

TRADOC historian Anne Chapman's study, *The National Training Center Matures, 1985-1993*, provides a valuable record of this historic training reform. It follows her excellent initial volume, which documented the NTC's origins in TRADOC studies of 1976 and early development through 1984. Dr. Chapman presents the National Training Center's experience comprehensively and with critical focus on the problems encountered as the center developed and refined its training methods and instrumentation.

Providing a force of soldiers and units trained and equipped to the highest state of readiness is our Army's great responsibility to the Nation. I commend Dr. Chapman's study to Army commanders and trainers as a

historical handbook of how the National Training Center evolved to operate as a world model for land combat training.

WILLIAM W. HARTZOG
General, United States Army
Commanding

Fort Monroe, Virginia, May 1997

Author's Preface

The Mojave Desert is home to the U.S. Army's National Training Center (NTC) at Fort Irwin, California, the Army's first combat training center (CTC). The victory achieved by the U.S. Army, its sister services, and the United States' allies over Iraq in the Gulf War to liberate Kuwait, seemed to vindicate the Army's huge investment in the CTCs to provide highly realistic tactical engagement and live-fire training. While a direct cost-benefit determination is difficult to achieve, it is clear that the CTC experience was instrumental in preparing the Army for war.

The author's first volume on the NTC, *The Origins and Development of the National Training Center, 1976-1984*, was an account of the development of the concept for the NTC, which would become the capstone experience in U.S. Army training of the 1980s and 1990s. Volume I focused on the early days of the training center and brought the NTC story to the close of 1984 when the success of the project seemed assured. The present volume provides a view of the NTC over the next nine years of its evolution, as the instrumentation system became increasingly more sophisticated and the opposing force (OPFOR) and exercise observer/controllers refined their roles. The 1993 cutoff for this second volume was chosen as a transition point from the focus of the NTC on pure training to the use of the training center additionally for battlefield digitization and Force XXI experiments. Unlike Volume I, the second volume is topical rather than

chronological. Its chapters present snapshots in time that, hopefully, capture the facets of the training center that make it unique. No effort has been made to focus on any particular period at the NTC over the nine years from 1985-1993; rather, the emphasis is on the evolutionary changes that would produce—in the National Training Center—the institution that was the major component of the post-Vietnam revolution in U.S. Army training.

Most of the primary sources cited herein are located in the United States Army Training and Doctrine Command's (TRADOC) Historical Research Collection in the TRADOC Military History Office at Fort Monroe, Va. Histories prepared at the U.S. Army Combined Arms Center, a major subordinate TRADOC command; at the U.S. Army Forces Command; and the U.S. Army Field Artillery Center and Fort Sill, were also consulted.

The author owes a large debt to many people who believed in the project to record the NTC experience and offered help and encouragement along the way. Historians on the staff of the Military History Office offered encouragement and patiently endured periods of discouragement. Dr. H. O. Malone and Dr. James T. Stensvaag as office chiefs provided support and understanding. A special expression of gratitude goes to John L. Romjue for sharing his knowledge and experience and for expert editing that made this a much better study. It would be difficult to overstate the contribution of military photographer Greg Stewart who made his vast collection of NTC photographs available, provided photographs of special subjects at the author's request, and offered numerous suggestions on the text. Design, layout, and camera-ready preparation were very expertly accomplished by Ms. Carolyn Haynes of the Fort Eustis Training and Audiovisual Support Center. Thanks also to Mr. Willard Owens and Mr. Will Moffett, Chief of the Fort Monroe Multimedia Services Division for their support,

and to Mrs. Diane Johnson of the Directorate of Information Management for efficient publication processing.

A number of NTC veterans willingly offered their insights. Special thanks are owed to Capt. Steve Small of the Army's Picatinny Arsenal who read and offered suggestions on large portions of the manuscript. This study is the richer for the numerous NTC observer/controllers and OPFOR personnel who left behind interviews recounting their NTC experiences. The TRADOC Technical Library staff and George Siehl of the Congressional Research Service were always willing to provide whatever support was needed. Members of the staff of the U.S. Army Training Support Center, Combat Training Support Directorate, provided information on tactical engagement simulation and NTC instrumentation. John Q. Smith of the U.S. Air Force Air Combat Command read the portion of the manuscript concerning Air Force participation at the NTC, and saved the author many errors. Winn B. McDougal, as with Volume I, read the entire manuscript and shared his extensive knowledge of Army training unstintingly. Lastly, much gratitude is owed the staffs of the NTC commander's office and the Fort Irwin Public Affairs and Protocol offices for making my visit to the National Training Center and Fort Irwin so pleasant and profitable. Many other friends and colleagues contributed to the improvement of this study with information and suggestions. Whatever flaws and shortcomings remain are the author's responsibility alone.

ANNE W. CHAPMAN, PH.D
Research Historian
Military History Office
United States Army Training
and Doctrine Command

Introduction

Again and again we have owed peace to the fact that we were prepared for war.

—Theodore Roosevelt
June 1897

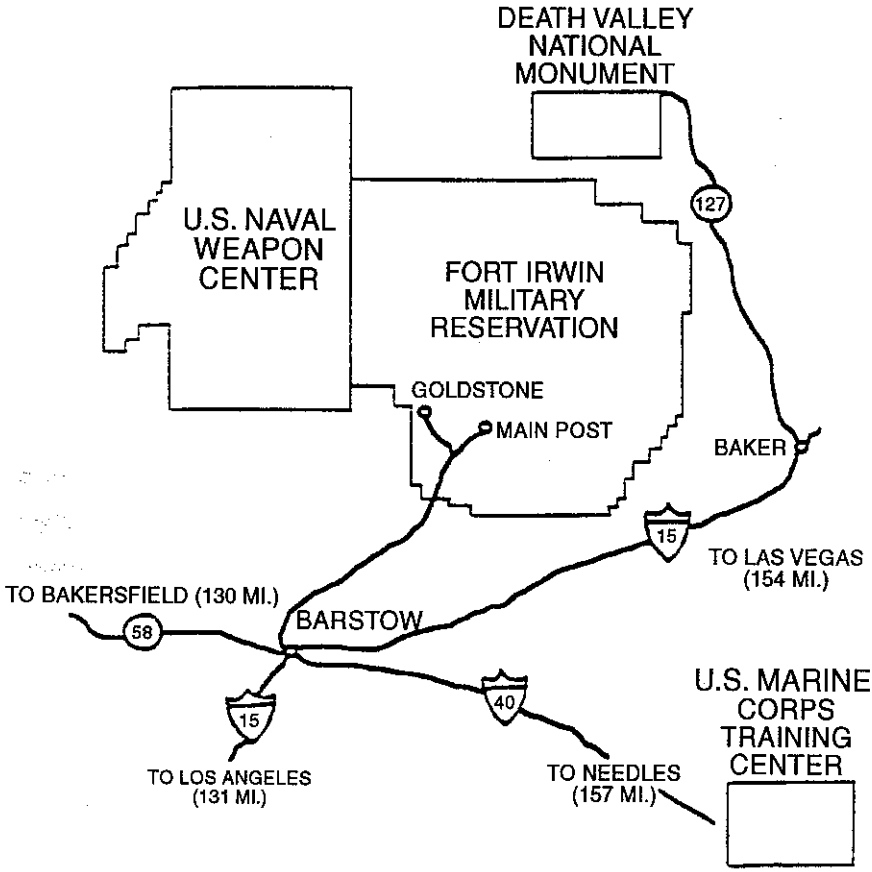
The establishment of the United States Army National Training Center (NTC) at Fort Irwin, Calif. in 1980 was the pinnacle and the capstone achievement of the revolution in training that had taken place in the United States Army since 1973. Since the end of American involvement in Vietnam, and spurred on by the lessons learned from the 1973 Arab-Israeli War, a group of senior leaders in the Army—in particular the first commander of the U.S. Army Training and Doctrine Command (TRADOC), General William E. DePuy, and his Deputy Chief of Staff for Training, Maj. Gen. Paul F. Gorman—realized that one of the Army's major wartime shortcomings had been the inability to train as the Army intended to fight. Historically, the United States had entered wars either unprepared, or prepared for the last war fought, a situation that often resulted in high casualties and costly campaigns. Further, there was the realization that, because of the overwhelming strength of its major potential adversary the Warsaw Pact, United States forces would have to fight and win outnumbered. The nation needed a ground warfare component with a modern doctrine and a new training

strategy. Maj. Gen. Gorman postulated that by applying a new doctrine and tactics to a realistic training battlefield, the Army might gain better insight into the inherent weaknesses of its training program. Realistic training would also provide a laboratory for the fielding of many new weapons systems. In addition, the Army needed a training center large enough to accommodate the range of modern weapons. These visionary ideas set in motion the birth of the NTC at Fort Irwin, a 1,000 square-mile installation of the U.S. Forces Command (FORSCOM) in California's Mojave Desert (Map 1).[1]

The first U.S. Army maneuver battalions conducted exercises at the National Training Center in 1981. Each of what came to be known as "rotations" featured a heavy armor and a mechanized infantry battalion task force from a FORSCOM heavy division or separate brigade, which, in keeping with Army doctrine, formed the task organization for mounted land warfare. Battalion task forces were specially tailored with tanks and infantry supported by field artillery, attack helicopters, and close air support—provided by the United States Air Force at the NTC. Later, as the NTC matured, rotations featured light infantry, cavalry squadrons, and motorized units. The objectives of the NTC as set forth in the original concept were to provide a facility where soldiers stationed in the continental United States could undergo combined arms training that could not be accomplished at their home stations because of physical limitations and the prohibitive cost of providing a realistic training environment. Brigades also participated by controlling the exercising battalions and their combat support

1. An account of the choice of Fort Irwin is in Anne W. Chapman, *The Origins and Development of the National Training Center, 1976-1984*, hereafter *NTC*, Vol I (Office of the Command Historian, United States Army Training and Doctrine command, Fort Monroe, Va., 1992), pp. 25-32.

Map 1
The Mojave Area and Fort Irwin



Source: Visitors' Notebook, Advanced Warfighting Experiment, April 1994.

and combat service support elements through simulated command post exercises. The NTC would also gather data to assist in improving doctrine, tactics, training, equipment, and procedures. The story of the early years of the NTC was recounted in the author's *Origins and Development of the National Training Center, 1976-1984*.[2]

During their time in the field at Fort Irwin, units experienced both force-on-force and live-fire training. To accomplish the mission of training soldiers for war in a setting as close as possible to the reality of combat, NTC training was based on three "pillars": an opposing force (OPFOR); a group of experienced trainers serving as exercise observer/controllers (O/C); and a sophisticated instrumentation system to gather data and provide the raw material for assessing unit performance. The OPFOR consisted of two U.S. heavy battalions, one infantry and one armored, which were permanently stationed at Fort Irwin. The two battalions were configured for battle as a Soviet motorized rifle regiment that considerably outnumbered the rotating units or "Blue Forces (BLUFOR)."[3] For the most part, their vehicles were U.S. equipment visually modified to resemble Soviet tanks, personnel carriers, air defense systems, light reconnaissance vehicles, and helicopters. Their battle doctrine and tactics were usually modeled on that used by Warsaw Pact forces.[4] The observer/controllers were teams of U.S. Army officers and noncommissioned officers on regular assignment to the NTC. Teams of O/Cs were assigned to each battalion task force rotation and accompanied the BLUFOR throughout that rotation. The O/C teams' functions were to control the battle, assess results, and provide an after action report

2. Ibid. passim.

3. The friendly forces at the NTC were also sometimes referred to as the "BLUFOR" or the "friendly force."

4. Cuban and Iraqi doctrinal models were also used on occasion.

at the conclusion of each engagement. Other O/Cs acted as training analysts in a central Operations Center located on the main post at Fort Irwin.

In order to achieve realism and adjudge "kills," "hits," and "near misses," the NTC featured a complex system of computers, laser engagement devices, and communications networks to collect data from encounters between the forces. Laser-based engagement simulation via the Multiple Integrated Laser Engagement System (MILES) provided a degree of realism in casualty assessment eclipsed only by actual combat. The data provided by MILES were then communicated to the aforementioned Operations Center and displayed on computer graphics terminals. Analysts could thus observe and control the battle and communicate with the observer/controllers in the field. In preparing the after action reports, the O/Cs depended heavily on the data processed by the instrumentation system. Simply put, sophisticated instrumentation helped training analysts and BLUFOR units to determine what happened, why it happened, and how revealed deficiencies could be corrected before the next battle.

The National Training Center also featured one of the Army's most sophisticated live-fire ranges. Located in the northern portion of Fort Irwin, the training range gave rotating troops an opportunity to attack or defend their positions against a simulated advancing force. Task forces armed with small arms, tank, and artillery ammunition faced approximately 1,500 computerized, radio-controlled pop-up targets that simulated the appearance, thermal signature, and firepower of a Soviet-style motorized rifle regiment. Some of the targets had the ability to "shoot back" with simulated tank fire and AT-3 Sagger anti-tank missiles.

In the summer of 1984, as the NTC approached its fifth year of operations, Army Chief of Staff General John A. Wickham, Jr. declared the innovative training center a success and called for plans to guide its future

development. As a result, Army and NTC leaders outlined the initiatives they believed would assure the NTC's continued evolution and maturity. Over the next nine years, the training center expanded existing programs and undertook a number of new ones. A ten-year plan established the parameters. Plans to exercise three actual BLUFOR battalions simultaneously, per rotation, rather than the current two battalions and a brigade "slice," were formulated. In order to accommodate brigade-level training, the center set in motion the necessary actions to acquire more training land. During that period, the Army addressed such issues as upgrades for the MILES and other instrumentation; new "surrogate" vehicles for the OPFOR; prepositioned equipment for BLUFOR use at Fort Irwin; and the configuration of the OPFOR given a changing world political and military environment. The role of the Air Force received much attention from both services. And the NTC's data collection function and a lessons learned program stirred considerable controversy.

It would be difficult to overstate the impact of the National Training Center on Army training. The successful training center at Fort Irwin stood as a tribute to the systems-based, hands-on approach that had dominated Army training since the mid-1970s. The NTC was a one-of-a-kind training and evaluation system found nowhere else. The system was designed to provide both subjective and objective observations and a degree of insight into unit performance never available previously in the history of military training. Between 1981 and October 1993, the NTC had trained 524,187 soldiers; 153,924 noncommissioned officers; and 39,228 officers, including 4,216 company commanders and 724 battalion commanders and their staffs, making it the Army's premier combat leader development environment. The NTC had also been the model for the establishment of two more—but somewhat different—maneuver combat training centers: the

U.S.-based Joint Readiness Training Center (JRTC)[5] for light forces, and the Combat Maneuver Training Center (CMTC) at Hohenfels, Germany, for forces assigned in Europe. Perhaps the most convincing testimony to the contribution of the NTC to Army training was the fact that a majority of the combat troops that deployed to the Arabian peninsula in Operations Desert Shield and Desert Storm in 1990-1991, had already experienced "war" in the desert and learned its harsh lessons, because of their training at the NTC.

As of the close of 1993, there was still much to do to assure that training at the NTC was the most realistic possible. And the question remained as to how the NTC, the most costly sustained Army training project in the peacetime history of the United States, would be affected as defense budgets shrank. Whatever the result, the United States Army was justly proud of its achievement in the successful establishment of its National Training Center in the Mojave Desert and the innovative center's proven impact on the Army's ability to fight and win.

5. The JRTC was established provisionally at Fort Chaffee, Ark. in 1987; between June and September 1993, it moved to a permanent home at Fort Polk, La.

CHAPTER I

The Evolving Basis of the National Training Center

In the late summer of 1984, having dubbed the National Training Center a total success, General John A. Wickham, Jr., Chief of Staff of the Army, requested that the commanders of the Training and Doctrine Command, Forces Command, the U.S. Army Combined Arms Center (CAC), and the National Training Center provide him their opinions on a number of "alternate concepts" for the NTC. He believed the time had come to examine the status of the training center and to develop plans for its future. In September, Wickham called for the Army to develop a five- and a ten-year plan for the NTC so that budget requirements could be accurately assessed. He wanted to consider such issues as the size of the OPFOR, the level of participation for units, combat support and combat service support, upgrading of the instrumentation system, formalizing the lessons learned system, land acquisition, and the capacity of the center to expand.[1]

General Wickham's decision to continue and to expand the successful venture was a signal event in the evolving basis of the National Training Center. Before turning to the major features of the NTC as it grew during the last half of the 1980s and the early 1990s, we will take note of the changing conceptual, planning, regulatory, personnel, and organizational basis of the Fort Irwin facility. It was this background that provided the stage for the maturity of National Training Center programs.

---

1. Msgs, Cdr TRADOC to CSA, 301911Z Jul 84, subj: Alternative Concepts for NTC; Cdr FORSCOM to CSA, 231900Z Aug 84, subj: Alternate Concepts for NTC. (2) Unless otherwise noted, all documents cited are located in the National Training Center Collection of the TRADOC Historical Records Collection (THRC), TRADOC Military History Office, Fort Monroe, Va. Prior to the spring of 1995, that office was known as the TRADOC Office of the Command Historian.

The Futures Concept and the Operations Concept - 1986

In 1985, the NTC Programs Office,[2] in accordance with Wickham's directive, began to update and revise the original National Training Center Development Plan of 3 April 1979. By mid-1986, a strawman concept entitled "Operational Concept for the National Training Center" had been developed. The document established development and operational guidelines for the NTC over the next ten years. The new guidelines would serve as the basis for promulgation of the bi-annual NTC five to ten year plans developed as part of the Army budget process. Following an NTC "functional area assessment" in June 1986 for General Maxwell R. Thurman, Vice Chief of Staff of the Army (VCSA), the task of developing an "NTC Futures Concept" fell to the Combined Arms Training Activity (CATA) of the Combined Arms Center at Fort Leavenworth, Kansas.[3]

By fall 1986, the NTC Programs Office of CATA (renamed the Advanced Collective Training Facility Programs Office late in 1986) had revised the operational concept strawman document and added the NTC futures concept as an introduction. During a meeting on 4 September, the NTC General Officer Executive Committee (GOEC)[4] concurred with the concept as a mark for planning.[5] Forces Command, with TRADOC assistance, identified the resources that would be required to implement the new operational concept. The Programs Office was then ready to brief the introductory portion, the futures concept, to the commanders of TRADOC, FORSCOM, and the Army Materiel Command (AMC). That briefing took place during 8-10 October 1986, followed by a briefing to the VCSA, General Thurman, on 20 October. As a result of another GOEC meeting at

---

2. Beginning in July 1984, the NTC Programs Office was an agency under the Combined Arms Training Activity (CATA) at the Combined Arms Center at Fort Leavenworth, Kansas.

3. Operational Concept for the National Training Center, [1986], p. 1.

4. Referred to variously as GOEC, General Officer Steering Committee (GOSC), and General Officer Working Group (GOWG). In the text, the usage follows the document from which the information was taken. The GOEC was chaired by the Department of the Army Director of Training, Office of the Deputy Chief of Staff for Operations and Plans. Voting members of the GOEC were representatives of HQDA; Army National Guard Deputy Director; TRADOC Deputy Chief of Staff for Training; CAC Deputy Commanding General-Training; FORSCOM G-3; NTC commander; JRTC Commander; AMC Deputy Commanding General for Research, Development, and Acquistion; USAREUR Assistant Deputy Chief of Staff-Training/Commander CMTC; and the USASOC Deputy Commanding General. Combat Training Center Directorate, CAC E-Mail, Fort Leavenworth Kansas, 16 Feb 94, subj: CTC GOSC.

5. Msg, HQDA to distr, 291344 Oct 86, subj: National Training Center-Future Concept "1996." The GOEC met twice a year, usually in March and September.

Headquarters TRADOC on 23 November, the concept was revised to reflect an incremental approach to bringing new equipment and personnel to the NTC. The revised concept was again briefed to the commanders of the major commands on 24-26 November 1986 and to Thurman on 3-4 December.[6]

The introductory NTC Futures Concept examined plans for the center's development at three points in time—past, present, and future—and forecast what the NTC would look like in 1996. In 1979, the original NTC Development Plan had envisioned an exercise area for FORSCOM battalion task forces as the primary NTC function. As a secondary function, the training center would serve as a source of data to answer questions concerning force readiness and the effectiveness of training and doctrine products. The early plan saw that at any given time, the NTC would host as many as four battalion task forces. Two of the task forces would be without troops and would participate in command post exercises (CPX) under the control of a brigade headquarters. According to the 1979 plan, the evaluation of the brigade headquarters was a unit responsibility; that is, the brigade would essentially evaluate itself. The remaining two task forces would take part in an engagement simulation exercise under brigade headquarters control and a live-fire exercise under control of the NTC, respectively. Neither a specific number of annual rotations nor a definite length of time for an individual rotation was set. The plan did assume that each Active Army battalion would exercise at the NTC twice every eighteen months—once as a CPX unit without troops and once as a full battalion task force. The original plan had not discussed methodologies for Armywide application of NTC data.[7]

By FY 1983, the CPX idea had been set aside, and the NTC played host to only two battalions at a time. One was involved in force-on-force exercises while the other participated in a live-fire exercise. Then the two task forces changed places so that each could conduct both types of training. That same arrangement had existed since the first rotation early in 1982. However, by FY 1983, the NTC provided a "notional" division headquarters represented by the TRADOC Operations Group. The division did not evaluate the brigade headquarters or the combat support or combat

---

6. (1) Operational Concept for the National Training Center [1986]. (2) NTC Futures Concept [1986]. (3) CAC Annual Historical Review, 1986, pp. 163-64. (4) Msg, Cdr CAC to distr, 151540Z Sep 86, subj: CAC Update. (5) Msg, HQDA to Cdr TRADOC et al, 091845Z Oct 86, subj: National Training Center (NTC) Futures Concept Briefing to VCSA. (6) TRADOC Deputy Chief of Staff for Training Significant Activities ATTG-ZX, 26 Nov 86. After the establishment of three other combat training centers, the ACTF Office became the CTC Directorate under CATA.

7. NTC Futures Concept, pp. i-vi.

service support elements of the brigade. Although the controlling Army Regulation 350-50, National Training Center (1980), had reiterated the NTC's secondary objective of data collection, the instrumentation still served largely to provide information for use in unit after action reviews (AAR) rather than as a data vehicle to "provide insights into the effectiveness of doctrine, organizations, equipment, tactics, and training techniques."[8]

By FY 1986, the number of annual rotations had been fixed at fourteen. Rotations of light infantry units with heavy armor and mechanized units (usually referred to and written as "heavy/light") had been introduced in 1985 to gain insights into the effectiveness of heavy/light doctrinal concepts emerging from Army of Excellence light forces expansion and restructuring efforts. Introduction of heavy/light and light/heavy rotations is discussed in Chapter II. Extended rotations of twenty-five days were added to allow commanders a chance to pause in the middle of a rotation and correct those deficiencies identified during the rotation to that point.[9]

A key point of the 1986 concept was the retention of the training focus on the maneuver battalion task force but with a commitment to move toward fully training a three-battalion brigade, set at that time to begin in FY 1992. In the interim, training and evaluation for the brigade slice would be significantly enhanced. Brigade operations with both battalion task forces in the same engagement simulation exercise became a standard part of each rotation. The controversial issue of training an actual brigade will be examined in greater detail below. Suffice it to say here that approval of greater brigade participation was, in part, a result of the retirement of TRADOC commander General William R. Richardson on 30 June 1986. Richardson had strongly opposed any move that threatened the strong focus on battalion-level training at the NTC.

In addition to those changes, field artillery participation had grown from a fire direction center and one firing battery that evaluated themselves, to a complete direct support battalion and an additional fire direction center—all evaluated by a new twenty-man trainer-controller section. As late as the end of 1983, Army aviation had taken no part in the exercises. By 1986 there was at least an entire attack helicopter company of 7 AH-1

---

8. (1) NTC Futures Concept, pp. ii-iii. (2) AR 350-50, National Training Center, 15 April 1980, p. 1 (quotation).

9. (1) NTC Futures Concept, 1986, p. iii. (2) National Training Center Executive Committee Meeting, 12 Mar 85. On the Army of Excellence see John L. Romjue, *The Army of Excellence: The Development of the 1980s Army* (Fort Monroe, Va.: Headquarters TRADOC, Office of the Command Historian, 1993).

Cobra and 5 OH-58 Kiowa helicopters evaluated by a ten-man trainer-controller section.[10] Logistics support, formerly unevaluated, now had a nine-man trainer-controller section. Instrumentation was still used largely to assemble after action reports, but a new Center for Army Lessons Learned (CALL), located at Fort Leavenworth, was expected to improve the collection and interpretation of NTC data. Data analysis and lessons learned efforts are discussed below. Efforts were underway to collect as much data as possible from the Phase I instrumentation system until a more sophisticated system could be developed and put in place.[11]

Ten years in the future, or by 1996, planners saw an NTC which conducted twelve rotations annually, of twenty-five days each. The focus of training would be on the brigade of three actual battalions, two of which would be, at any one time, in engagement simulation controlled by brigade headquarters, while the third would be in live-fire under NTC control. The other elements of the brigade—headquarters, the artillery battalion, the attack helicopter battalion, the forward support battalion and other "slice" units—would all be evaluated by NTC trainer-controllers. The division and corps-level battles would be portrayed via simulation. The Futures Concept called for improvement of the Phase II instrumentation system to permit "inobtrusive [sic], non-interference collection of data and information to aid in the combat developments process." Plans for the installation of interactive work stations at units' home stations promised to provide the capability to replay NTC data tapes to aid in the improvement of home station training. NTC planners also saw the possibility of conducting simulated command post exercises at the division and corps levels.[12]

The Operational Concept for the National Training Center, for which the Futures Concept served as an introduction, went on to flesh out the Futures Concept. The NTC's mission and philosophy had not changed and would not change significantly from that adopted in the original concept and the 1979 Development Plan. The NTC would remain an institution dedicated to the most realistic battlefield training possible through force-on-force maneuvers and live-fire exercises. Its secondary mission—that of

10. The term "trainer-controller" appears to have been coined to mean both the field observer-controllers and the training analysts in the TRADOC Operations Group who operated the fixed instrumentation system and monitored the training exercises. Only with regard to the 1986 futures and operational concepts has the author used the term. Elsewhere the more familiar "observer/controller" (OC) and "training analysts" have been employed.

11. NTC Futures Concept, pp. iii-iv.

12. NTC Futures Concept, pp. vi-v.

data collection and analysis leading to lessons learned—also remained in place. A major change from the 1979 NTC Development Plan, as noted above, included exercises for FORSCOM or U.S. Army Western Command (WESTCOM) active Army or reserve component close-combat light brigades, which would engage in field training exercises with a heavy brigade. And, as noted in the Futures Concept, the 1986 concept called for twelve rotations of twenty-five days each instead of the traditional fourteen annual rotations of 20-21 days each.[13]

The remainder of the document, in general, reemphasized the principles already in place in 1986 and implied by the very reason for its being—that is, to map out a ten-year plan—that would remain in place through 1996. A change, however, would take place in the opposing forces (OPFOR) when training focused on a brigade headquarters task-organized with up to three, rather than the customary two, heavy ground maneuver battalion task forces. The OPFOR would then replicate a Soviet-style motorized rifle division (MRD) rather than a motorized rifle regiment (MRR). The concept also restated a commitment to the development of a system to automatically replicate and record the effects of indirect fire other than the use of fire markers. The inability to adequately simulate indirect fire had plagued the NTC from the beginning. Plans through 1996 included the expansion of the NTC maneuver area to allow for exercises by "full-up" brigades. Finally, The Operational Concept optimistically looked to the Air Force to develop a laser engagement system that would be compatible with the Army's MILES. All these topics are discussed in greater detail below.

More Training Centers and A Master Plan

As the NTC charted a course for its future, the Army, based on the NTC's success, began planning for the establishment of other training centers modeled after the center at Fort Irwin. One of the new centers would provide NTC-like training for light forces. Another would provide realistic battlefield training for forces stationed with U.S. Army Europe (USAREUR). The last would be a simulated division and corps level command post exercise similar to that called for in the 1986 Futures and Operational Concepts.

---

13. Operational Concept, [1986], pp. 1-5. The 12-rotation annual schedule was based on a "28 day model" for each rotation, which included in addition to a total of 25 days for equipment issue, training, equipment turn-in, and final clean-up, three "comp" days.

In the decade following the end of the Vietnam War, the United States Army had concentrated almost exclusively on heavy force doctrine and organization, in response to the Soviet threat. In 1983, the Army's new Chief of Staff, General John A. Wickham, Jr., took measures to establish a more balanced force structure. Light forces were a substantial part of his restructuring strategy, especially the light division, with approximately 10,000 personnel, which could be rapidly deployed. Wickham established training as "the most critical element of our light infantry blueprint." In line with that belief, he directed the TRADOC commander, General William R. Richardson, to develop a concept for a light infantry training center, modeled on the National Training Center, where airborne, air assault, Ranger, special operations forces, and the new light battalions could engage in realistic battlefield maneuvers. At that time (October 1983), the NTC trained only heavy battalions. Three years later, after much controversy, the Secretary of the Army, John O. Marsh, Jr., approved the Joint Readiness Training Center (JRTC) effort.[14] Planners chose Fort Chaffee, Arkansas, as the temporary location of the new training center. The JRTC was exclusively a TRADOC effort, unlike the NTC which, as noted above, was a joint TRADOC and FORSCOM program. In October 1987, the first units rotated through the JRTC.[15]

As the Army looked ahead to the training of the first light forces at the JRTC in October 1987, it began planning for the establishment of the heavy-unit oriented Combat Maneuver Training Complex (CMTC) to be located on a 44,000-acre site at Hohenfels, Federal Republic of Germany. Like the JRTC, the CMTC was modeled on the NTC. Training offered there would provide European-based troops with similar realistic combined arms training exercises as were available at the NTC. Plans were for fifty-two armor and mechanized battalion task forces and cavalry squadrons to train annually against an opposing force, in a mid- to high-intensity environment. The training center at Hohenfels would also feature a TRADOC operations group and an instrumentation system which would be developed in two phases, initial (interim) and objective. In early February 1988, a CMTC working group met at Seventh Army Training Command headquarters to draft a concept plan and amendment to the U.S. Army Europe

14. A detailed discussion of the debate over the creation of a light forces training center is at Chapter II.

15. (1) CAC Annual Historical Review, 1986, pp. 343-44. (2) General John A. Wickham, Jr. Chief of Staff, US Army, White Paper 1984: Light Infantry Divisions (Washington, DC, Department of the Army, 16 Apr 84) p. 4. The original name of the JRTC was the Light Forces National Training Center. In June 1993, the JRTC moved to Fort Polk, La. At that time it became a joint TRADOC and FORSCOM enterprise along the same lines as the NTC.

(USAREUR)-TRADOC memorandum of understanding establishing TRADOC's presence in USAREUR. The operations group would start out under USAREUR control. Plans called for control to be transferred to TRADOC in FY 1992.[16] To train the opposing forces, an OPFOR academy began operations at the CMTC in October 1988. The first training rotation was conducted in 1989. USAREUR decided on a rotation of interim OPFOR until the center became fully operational in FY 1991, at which time a dedicated OPFOR battalion would be stationed at Hohenfels.[17]

If the NTC provided effective training for heavy forces, the JRTC for light forces, and the CMTC for Europe-based forces, what of advanced training opportunities for active and National Guard division and corps commanders, their staffs and major subordinate commanders? To meet that need, General Wickham, still Chief of Staff of the Army, approved the concept of the Battle Command Training Program, or BCTP, in January 1987. According to the concept, BCTP would train senior commanders in warfighting skills in a five-day seminar at Fort Leavenworth or home station, followed by a five-day computer-driven warfighter command post exercise conducted by mobile training teams at home station or at a regional site. The seminars were designed to provide the training audience an opportunity to discuss doctrine and tactics and arrive at insights about modern warfighting. They also were intended to build cohesiveness between the commander and his battle staff. Warfighter exercises would provide a realistic battlefield simulation that required the player unit to fight as a team while performing to standards. As with the other new training centers, planners hoped the BCTP could provide the Army a means of determining strengths and weaknesses in its training programs. The goal was for every division and corps commander to receive a BCTP experience at least once during his command tour.[18]

Exercises in the BCTP began in November 1987. Plans for the future included training the commanders and staffs of ten active and National Guard divisions and two corps, or eight divisions and three corps, per

---

16. Transfer of control of the CMTC Operations Group to TRADOC was postponed and had not occurred at this writing.

17. (1) TRADOC Annual Historical Review, 1989, pp. 209-10 (FOR OFFICIAL USE ONLY — Info used is not protected). (2) Issue Summary Sheet, ODCST, 18 Oct 88, subj: Combat Maneuver Training Center (CMTC). (3) Semiannual Staff Historical Report, ODCST, 1 Jan 89 - 30 Jun 89, p. 91. The original name of the training center at Hohenfels was the "Combat Maneuver Training Complex."

18. (1) TRADOC Annual Historical Review, 1989, pp. 210-11. (FOR OFFICIAL USE ONLY — Info used is not protected). (2) End of Tour Report, Thurman to Vuono, August 1989. (3) For a description of the technology and operation of the BCTP, see Lt. Col. (Ret) Thomas D. Morgan, "BCTP: Preparing for War," *Military Review*, November 1989, pp. 3-10.

year. As this study was completed, program advances included the continued development of a remoting capability that would allow units in the continental United States to "fight" at their home station as opposed to deployment to a corps battle simulation center. If it proved successful, that capability would be expanded and offered to USAREUR units. In addition, a permanent "world class" OPFOR began transmitting Red Force exercise play from a new Fort Leavenworth Battle Simulation Center (later titled the National Simulation Center) to exercise locations at the various corps. Whatever the future, the elevation of NTC-style training and evaluation to corps and division level was bound to raise anew many of the issues and concerns surrounding NTC training.[19]

With all the activity to establish sites and programs for advanced training, the effort to develop a "futures concept"—discussed above—took a new turn. On 23 January 1987, General Wickham approved a "master concept" which would, in effect, bring the NTC, JRTC, and CMTC, all under a unified training umbrella, especially for planning and resourcing purposes. Most of the issues addressed in the Operational Concept and the NTC Futures 1996 plan of October 1986 were outlined in what was known as the Advanced Collective Training Facilities (ACTF) concept.[20]

In September 1987 the Combined Arms Training Activity (CATA) at Fort Leavenworth, Kansas, articulated the need for an evolutionary "Master Plan" that would encompass the entire CTC program and ensure coordinated growth of the three new centers in conjunction with further development of the NTC. The ACTF designation was changed to "Combat Training Centers (CTC)" in May 1987 when the BCTP was added to the concept. The CTC program was designed to provide tough, realistic, combined arms and services training—in accordance with AirLand Battle doctrine—for leaders and units from company through corps. Collectively, the four facilities would serve as places where Active Army, National Guard, and Army Reserve units could undertake mission essential training that could not be accomplished at home station because of physical limitations or the prohibitive cost of providing a realistic environment. While the NTC would remain the "capstone" Army training experience, planners wanted a consolidated program that would have the capacity to train heavy, light, and

---

19. (1) End of Tour Report, General Maxwell R. Thurman, Cdr TRADOC to General Carl E. Vuono, CSA, August 1989. (2) Semiannual Historical Reports, ODCST, 1 Jan - 30 Jun 89, p. 76; 1 Apr - 30 Sep 89, p. 65. (3) Briefing, ODCST to TRADOC Liaison Officers' Conference, 7-11 Aug 89, Hampton, Va.

20. (1) TRADOC Annual Historical Review, 1987, p. 35 (SECRET — Info used is UNCLASSIFIED). (2) Briefing Slides, CATA to CSA, [1986], subj: Advanced Collective Training Facilities. That briefing also requested approval of the gradual movement to training three "full-up" battalions at the NTC.

special operations forces across the spectrum of conflict. The Master Plan, which would be updated twice yearly, would also allow for the "cross-leveling" of resources across the four training programs.[21]

The Master Plan itself was designed to chart a course for the combat training centers—in a series of steps—from FY 1990 through FY 2000 via a centrally managed program. To provide that management, the plan provided for a CTC Quarterly Review Board and Council of Colonels made up of representatives of the Department of the Army, FORSCOM, TRADOC Headquarters staff, the Army Training Support Center (ATSC), USAREUR, the U.S. Special Operations Command, CATA, and the four training centers. The review board and Council of Colonels monitored progress and established priorities in meetings normally held in November, February, May, and August. A General Officer Executive Committee chaired by the Department of the Army Director of Training met in March and September of each year to consider recommendations of the quarterly review panel and provide final approval of new CTC program requirements (Chart 1).[22] In October 1988, planners for each of the CTCs presented a first draft of their plans to CATA. After a number of quarterly reviews, reviews by the General Officer Executive Committee, and numerous briefings to senior Army officials, General Carl E. Vuono, now Army Chief of Staff, approved the original CTC Master Plan in August 1989. Thereafter, the plan was revised biennially in accordance with the Department of the Army "program objective memorandum" (POM) cycle to meet changing circumstances and requirements.[23]

The 1989 plan was detailed in five volumes. The first four volumes included master plans developed by each of the combat training centers. In the fifth volume, the Army Deputy Chief of Staff for Operations and Plans provided an executive overview that detailed Department of the Army policy, guidance, and current resourcing for the CTC program. If all

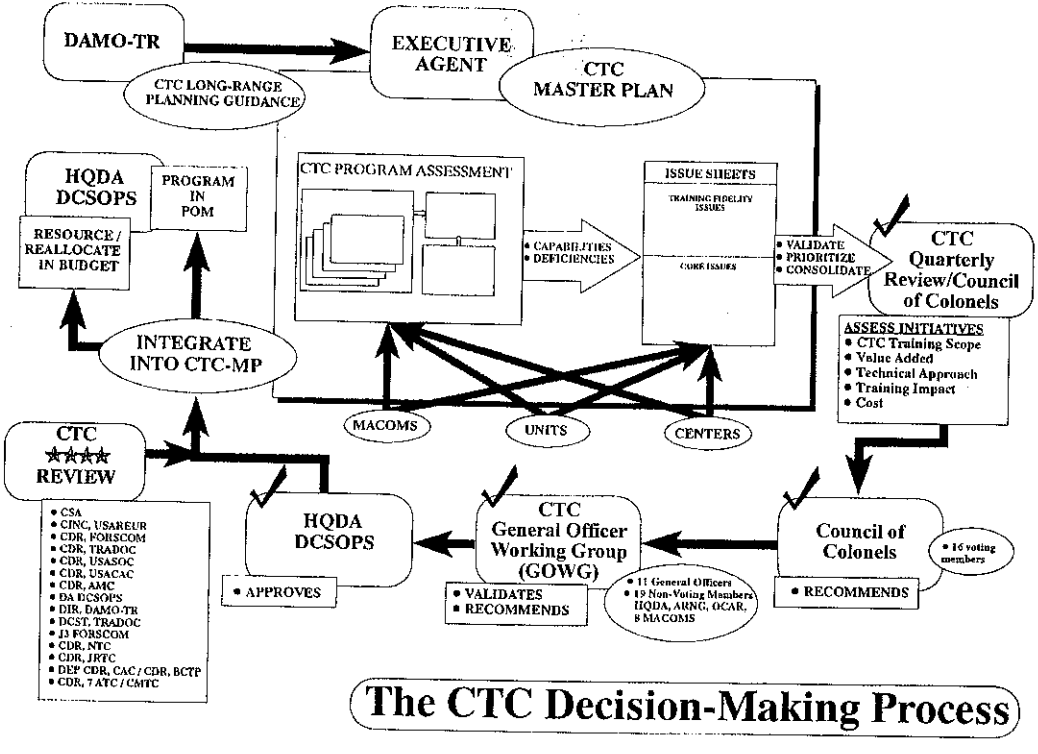
---

21. (1) TRADOC Annual Historical Review, 1987, p. p. 35 (SECRET — Info used is UNCLASSIFIED). (2) TRADOC AHR, 1988, p. 151. (3) CATA Briefing to CSA, [1986], subj: Advanced Collective Training Facility. (4) CTC Master Plan, enclosure to Memorandum ATZL-CTC, CAC Commanding General for Training to DA Director of Training, 21 June 1991, subj: Combat Training Centers Master Plan [hereafter cited as CTC Master Plan] Appendix 1, p. 1-1.

22. The 1989 Master Plan made no provision for a "4-Star Review" (a panel of senior general officers), but such a forum subsequently became a part of the CTC decision-making process. The 4-Star Review was conducted once a year to review CTC status and accomplishments as identified by the Council of Colonels and the General Officer Executive Committee. Combat Training Center Directorate, ODCST, HQ TRADOC, Fort Monroe, VA, E-Mail, 7 Dec 94, subj: Combat Training Centers Master Plan.

23. (1) TRADOC Annual Historical Review, 1988, p. 151. (2) CTC Master Plan, 21 June 1991, Appendix 1, p. 1-1. The NTC GOEC became the CTC GOEC.

Chart 1
Combat Training Centers - Program Requirements



Source: Combat Training Center Master Plan: The CTC-MP Process, prep. 25 May 93.

the elements of the program became fully operational, the Army would have the ability to train heavy, light, heavy/light, and special operations forces, at all levels of organization, across the conflict continuum. Developers of the master plan also saw the four programs included in the CTC concept as capable of providing a means of collecting and analyzing a variety of data concerning battlefield performance and the effectiveness of training under simulated combat conditions. Properly managed and employed, such data could provide a source of guidance for the development of Army training systems, doctrine, force structure, and materiel acquisition programs for new weapons systems and equipment.[24]

The NTC volume of the 1989 Master Plan included the proposed expansion of the NTC to support brigade operations by adding a brigade headquarters, a third battalion and a forward support battalion. That action would make necessary a corresponding expansion of the TRADOC Operations Group and the OPFOR. Meanwhile, in October 1987, the NTC began to train and evaluate the brigade commander and his staff, in addition to the maneuver battalion task forces.[25] The Army planned to continue to train twenty-eight battalion task forces each year through FY 1992. Beginning in FY 1993, plans were to train 12 brigades of three battalion task forces each, annually. That change was later moved forward to FY 1994. It was hoped that focusing on the battalion fight in context of the brigade fight would allow better training in the synchronization of maneuver, air-ground operations, combat support, and combat service support. However, the Master Plan specifically stated that the NTC was not to have a third maneuver battalion during each rotation until the JRTC, CMTC, and BCTP were "on line." Maj. Gen. Wesley K. Clark, a former commander of both the Operations Group and of the NTC, would later express his belief that that stipulation was a serious mistake, in that the cross-leveling of resources from the NTC upgrades to the other programs severely slowed improvements at the NTC.[26]

---

24. (1) TRADOC Annual Historical Review, 1989, pp. 201-02 (FOR OFFICIAL USE ONLY — Info used is not protected). (2) Gen Maxwell R. Thurman, "TRADOC: Evolving to Meet the Threat," *Army*, Oct 1988, p. 60. (3) General Carl E. Vuono, "Today's U.S. Army: Trained and Ready in an Era of Change," ibid., p. 25. (4) TRADOC General Officer Notes, Jun 89; Jul 89; Sep 89. (5) Vision 91 Briefing, ODCST, TRADOC Commanders' Conference, 4-7 Oct 88. (6) TRADOC ODCST Briefing to TRADOC Liaison Officers' Conference, 7-10 Aug 89, Hampton, Va. (7) AR 350-50, Combat Training Center Program, 27 May 88.

25. As aforementioned, the controversy over the expansion of the training program to include three "real" battalions is discussed in greater detail in Chapter II.

26. (1) CTC Master Plan, passim. (2) Interview with Maj. Gen. Clark, TRADOC Deputy Chief of Staff for Concepts, Doctrine, and Development by John L. Romjue and Anne W. Chapman, 8 July 1992.

To support the expansion of the NTC—that is, the training of three battalion task forces—FORSCOM would have to increase the OPFOR by one armor battalion and one mechanized infantry battalion. TRADOC would have to increase the instrumentation and provide enough observer-controllers (O/Cs) to accommodate heavy brigade exercises. Such exercises would also require considerably more maneuver space. As noted above, efforts had already begun to acquire more land in the Mojave Desert contiguous to the existing acreage. Other NTC plans for the future included linking the instrumentation systems at Fort Irwin with those of the Air Force's Red Flag air combat maneuver operations at Nellis Air Force Base, Nevada, and the establishment of integrated debriefing and after action review facilities at the NTC, Nellis AFB, and George AFB, California. In addition, the plan looked to new combat vehicles for the OPFOR to replace an aging and worn fleet and a communications network between the four CTCs. Most of these topics are covered in detail in subsequent chapters.[27]

Following a CTC General Officer Executive Meeting on 26 March 1991, the Army Director of Training, Brig. Gen. Larry Lehowicz, directed CATA to prepare a Master Plan document to describe the CTCs through FY 1994. The document was also to capture all relevant CTC actions approved to date by the Chief of Staff of the Army. Lehowicz was anxious that the document be completed before the Chief of Staff, General Carl E. Vuono, retired in June and that it be available to the new Army Chief of Staff, General Gordon R. Sullivan. On 21 June, Brig. Gen. James M. Lyle, Deputy Commanding General for Training at the Combined Arms Center, submitted the 1991 CTC Master Plan to Lehowicz. For the most part, the NTC objectives for FY 1994 remained the same, except that when funding levels had failed to support some of the original objectives, they had been acknowledged as valid by the senior Army leadership, but designated as "not fully funded." Those programs included land acquisition, military construction, additional prepositioned equipment, new vehicles for the OPFOR, and the planned communications network between the CTCs. The CMTC and BCTP had no unfunded requirements and the JRTC had only one. However, because of limited resources, the projected completion dates of most programs for the CTCs were moved forward to FY 1994. The

27. (1) TRADOC Annual Historical Review, 1989, pp. 204-05. (2) Issue Summary Sheet, ODCST, 18 Oct 88, subj: National Training Center. (3) Semiannual Staff Historical Report, ODCST, 1 Jan - 30 Jun 89, p. 65; 1 Jan - 30 Jun 90, p. 72. (4) End of Tour Briefing, General Maxwell R. Thurman, TRADOC Commander, to General Carl E. Vuono, Chief of Staff of the Army, August 1989. (5) Msg, Cdr FORSCOM to distr, 211650Z Sep 89, subj: NTC Options - Combat Training Center Master Plan.

1991 document became the basis for further development of an updated CTC Master Plan in conjunction with upcoming "POM" cycles.[28]

In order to provide structure to the prioritization of resources required to support the CTC programs, all future growth and development requirements would be categorized in terms of the unit; OPFOR; Operations Group; Training Facility, to include instrumentation; and base operations. While some CTC programs would have to be delayed because of budget pressures, they received support from the top Army leadership. After having been briefed on the Master Plan in August 1989, General Vuono had stressed the need for the Army to create a realistic and exciting training environment on the CTC battlefield in order that it might continue to recruit and retain intelligent men and women in the Army. At that time he also directed the Army leadership to be certain that the force understood that in an era of constrained resources, the Army might have to cut back in other areas to allow for building the CTC battlefields.[29]

Despite the strong support of senior Army leaders for the NTC program and for the programs of the other CTCs, circumstances forced frequent adjustments to the Master Plan. The original 1989 plan called for the NTC—by 1994—to conduct ten light battalion-level exercises per year, three to four of which would involve rehearsing contingency operations (CONOPS). The unit deployment requirements of Operations Just Cause in Panama in 1989 and Desert Shield and Desert Storm in Saudi-Arabia in 1990-1991 and the subsequent downsizing of the Army beginning in 1992, caused some disruption in the program. For example, in 1991, the NTC conducted only six heavy/light and two CONOPS exercises. The 1991 Master Plan took those changes into account and reduced the number of rotations annually from 14 to 12 for 1994, but light forces would be integrated to a large degree and the NTC would work toward the instrumentation capability to integrate air-ground and contingency operations.[30]

As the Army and the defense budget grew smaller, the CTC Master Plan evolved, and the process was refined, the Army turned to automation to provide a tool to give access to data to support the decision-making process—primarily with regard to the allocation of scarce resources among the CTCs. In short, the database created would assist the Council of Colonels

---

28. CTC Master Plan, 1991, passim. Brig. Gen. Lyle became Army Director of Training in August 1991. The 1989 Master Plan proposed funding the CTCs at $2.4 billion; funding later had to be revised to $1.3 billion. POM stood for Program Objective Memorandum.

29. (1) TRADOC Annual Historical Review, 1989, p. 202. (2) CTC Master Plan, 1991, pp. 7-8.

30. Heavy/light and light/heavy rotations are discussed in Chapter II.

and the GOSC in integrating the management of the four training programs. In October 1992, the CTC Directorate, through CAC-Training, awarded a contract for development of a program to link the databases of the CTCs and provide an efficient means of updating the Master Plan as changes occurred. To further assist program managers, the automated "living Master Plan" was accompanied by a published document consisting of fifteen volumes and five appendices. Seven of the printed resource volumes addressed issues pertaining to all the CTCs, such as program funding, and information on each of the training facilities. The remaining volumes addressed issues concerning the major commands involved in the CTC program.[31]

Army and Forces Command Regulations 350-50

The regulation that had governed the NTC development process since April 1980 was Army Regulation (AR) 350-50, National Training Center. The two-and-a-half page regulation, signed by then Army Chief of Staff General Edward C. Meyer, briefly set forth the concept of the NTC and its purposes and objectives. It also defined the roles and responsibilities of FORSCOM, TRADOC, and AMC. At the time of its adoption, it had been designed to settle a number of disagreements between TRADOC and FORSCOM over control of the various functions of a National Training Center.[32]

On 30 June 1984, after nearly two and a half years of battalion task force rotations at the NTC, FORSCOM published Circular 350-84-10, Rotational Training at the National Training Center. The twenty-five-page circular drew on the experience thus far gained and was obviously meant to "assign responsibilities for NTC activities" and serve as a guide for FORSCOM active and reserve units and the NTC support elements at Fort Irwin, but it also outlined TRADOC responsibilities.[33] As set forth in FORSCOM Circular 350-84-10, TRADOC's role was almost identical to that set forth in the 1980 version of AR 350-50, with one exception: a section was added making the identification and dissemination of "lessons

---

31. Combined Arms Command-Training, Combat Training Center Directorate, Fort Leavenworth Kansas, Combat Training Center Master Plan: The CTC-MP Process, 25 May 93. The October 1992 contract for development of a program to link the CTC databases was awarded to Titan Applications.

32. The adoption of AR 350-50 (1980) is discussed in Chapman, *NTC*, Vol I, p. 34.

33. TRADOC never adopted a separate regulation governing that command's role at the NTC.

learned" one of TRADOC's roles. The significance of that addition will become clear further on in this study.[34]

With the end of the first phase of NTC development at hand, a new edition of the Department of the Army regulation seemed in order. The task of authoring the new regulation fell to the five-person National Training Center Programs Office at the Combined Arms Training Activity. On 19 September 1985, the Army Director of Training sent out a final draft of the regulation for comment. The September 1985 draft of AR 350-50, National Training Center, did not change the basic NTC concept contained in the 1980 edition, nor did it significantly change FORSCOM's or TRADOC's responsibilities. Like the 1984 FORSCOM circular, the draft regulation did specifically spell out TRADOC's responsibility for lessons learned at the NTC.[35]

The 1985 draft regulation also contained a section not found in its 1980 predecessor—one dealing with visitors to Fort Irwin and the NTC. The authors of the earlier regulation, which had been written before the NTC began operations, could not have anticipated the interest the training center would generate nationally and internationally among the military, political, and media communities. In its first two and a half years, the NTC had received numerous requests for visits and hosted hundreds of visitors. The NTC cadre complained of training distracters and NTC commanders complained that they were not notified of impending visits. The draft of the revised regulation categorized visitors to the training center from 1 to 5, those military personnel involved in training being category one, and local news media, civic groups, and others not involved in training being category five. Others such as members of Congress, senior military officials, representatives of foreign governments, industry executives, and national news media representatives, fell somewhere in between. The draft also established formal procedures that all persons who requested a visit to the NTC had to follow. As the September 1985 draft of AR 350-50 was being fielded, the aforementioned efforts to consolidate management of the NTC with the three combat training centers under development served to make it obsolete. Although retitled "Advanced Collective Training Centers," the 1985 draft was never adopted. The procedures for the approval of visits were, however, adopted separately and remained in place at the end of 1993.[36]

---

34. FORSCOM Circular 350-84-10, Rotational Training at the National Training Center, 30 Jun 84.

35. AR 350-50 (Draft), National Training Center, 19 Sep 85.

36. (1) AR 350-50, National Training Center, 15 April 1980. (2) AR 350-50 (DRAFT), National Training Center, 19 Sep 85, pp. 9-12. (3) AR 350-50, Combat Training Centers, 27 Jun 88, p. 1. (4) Msg, Cdr FORSCOM to distr, 171425Z Dec 93, subj: Approval of Requirements to Visit the CONUS Cbt Tng Ctrs (CNCTC) (NTC and JRTC).

On 27 May 1988, six months after General Wickham had approved the concept of a Master Plan, the Department of the Army finally circulated a new AR 350-50, Combat Training Centers, to become effective exactly one month later. The new regulation was designed to establish and prescribe Department of the Army policies, objectives, and responsibilities for the entire CTC Program, including the NTC. Although the new regulation was much more detailed, its structure radically revised, and it contained much greater emphasis on joint and combined arms operations than its 1980 predecessor, the roles and responsibilities of TRADOC and FORSCOM at the NTC remained essentially the same. Two issues, however, that had been addressed in the NTC regulation of 1980, were conspicuous by their absence.

First, no mention was made as to the status of the testing of new concepts, equipment, or systems at the CTCs. The 1980 NTC AR 350-50 had permitted such testing when "it does not interfere with the training . . . ." However, over the first years of the NTC's existence, the question of the effect of such tests on the quality of training had arisen many times. Indeed, as this study is being written, the debate continues. The CTC regulation offered no guidance.

The second issue concerned data collection, analysis, and dissemination at the CTCs. Although the 1980 NTC regulation clearly stated that "the training environment will be paramount at the NTC. Data collection will be secondary to accomplishing training objectives," that concept was widely misunderstood. That misunderstanding was especially widespread among members of Congress who believed the NTC was not living up to its potential by failing to analyze data to assist in assessing doctrine, tactics, and evaluating training development efforts. The results of the struggle are told in much greater detail in Chapter VIII. Suffice it to say here that while data collection was mentioned in the 1988 AR 350-50, no guidance was given as to its priority.[37]

The 1988 edition of AR 350-50, Combat Training Center Program, survived for five years before an interim draft of a revised regulation was sent to the field for review. Although the format was significantly changed, the June 1993 interim draft made few changes in the assignment of responsibilities to Department of the Army elements and the major commands involved in CTC development and management. The proposed regulation was in general somewhat more detailed than the 1988 regulation. Again, no

37. (1) AR 350-50, Combat Training Center Program, 27 Jun 88. (2) For the early debate over data collection, analysis, and dissemination at the NTC, see Chapman, *NTC*, Vol. I, pp. 111-27.

specific mention was made as to the policy toward testing and experimentation or to the relative importance of data collection and the dissemination of "lessons learned" as opposed to the paramount function of training.[38]

As of the close of 1993, the new regulation had not been approved. Several issues had arisen and policy changes had been made that dictated another look at AR 350-50 and a companion document, DA Pam 350-50, Combat Training Center Program Management. The issues that most affected the NTC dealt with the role of the CTCs in reserve component training, the prepositioning of equipment at Fort Irwin for BLUFOR use, and the use of the NTC for "advanced warfighting experiments." The training of reserve forces at the NTC, and elsewhere, had taken on added importance as the Army grew smaller and more reliance had to be placed on the potential call-up of the U.S. Army Reserve and Army National Guard troops. Still in question was who should pay for National Guard training. Also, still unresolved was the use of the maneuver training centers for "advanced warfighting experiments" (AWE). Army Chief of Staff Sullivan and TRADOC commander General Frederick M. Franks, Jr. wished to employ the centers to test new technology based on "digitization" principles which, it was hoped, would aid commanders in "situational awareness" on the battlefield. They planned to begin demonstrations of the new technology at the NTC in the spring of 1994. Forces Command strongly objected on the grounds that turning the CTCs into testing sites would detract from training. As for the issue of prepositioning equipment, many commanders wanted to leave all equipment at home station and use prepositioned equipment, to train soldiers for quick reaction in emergencies by eliminating the necessity to prepare equipment for transport.[39]

Personnel Issues

Even before the first battalion task forces conducted force-on-force or live-fire exercises at the NTC, the table of distribution and allowances authorizing personnel and equipment for the TRADOC Operations Group had been a major problem. The difficulties, examined in detail in Volume I of this study, were also symptomatic of the tensions between TRADOC and FORSCOM in coordinating their efforts in the best interest of the NTC and

38. AR 350-50, Combat Training Center Program, interim draft, June 1993.

39. Msg, Cdr TRADOC to distr, 211430Z Nov 1994, subj: C1 to AR 350-50, Combat Training Center Program and C1 to DA Pam 350-50, CTC Program Management. The prepositioning issue reflected the Army's efforts to establish a program for prepositioning equipment afloat as part of plans for rapid deployment.

its training program. From time to time since operations had begun at Fort Irwin, disagreements between the two commands over personnel had surfaced. On 15 June 1991, FORSCOM published a new regulation 350-50, Training at the National Training Center. The new regulation was, in part, an update of the 1984 Circular 350-84-10 which had expired in January 1985 and FORSCOM Regulation 350-50, Training at the National Training Center, of 15 November 1987, but it also addressed some new issues and incorporated changes that had occurred as the NTC matured. Among those changes were the establishment of a Leader Training Program and guidance for the deployment of reserve forces to the NTC for training.

Perhaps most importantly, the new regulation had a major effect on the TRADOC Operations Group. Specifically, the regulation made allowances for training units to deploy troops and equipment in excess of the support capabilities of the Operations Group. To make matters worse, a U.S. Army Force Integration Support Agency (USAFISA) manpower survey mandated that the maximum authorized strength of the Operations Group be based on the deployed strength and task organization of the standard troop list for each rotation. The study also endorsed the use of augmentee O/Cs, which FORSCOM would supply when excess requirements existed. Further complicating the issue was the USAFISA recommendation that 35 positions within the Operations Group be eliminated. The Operations Group commander had requested, under the Schedule X procedures, a personnel increase of some 175 positions. The recommendation, therefore, represented a manpower shortfall of some 211 positions from mission essential levels as represented by the Operations Group commander. In light of all that, the central question became which command had control over the FORSCOM-supplied, but TRADOC Operations Group-assigned O/Cs?[40]

In addition to those deep personnel cuts, the manpower survey served to highlight once again the delicate issues associated with the joint MACOM control of the National Training Center. Under AR 350-50 (1988) TRADOC was required to:

> provide and train an Operations Group . . . that is sufficiently staffed and organized to develop scenarios, assess the performance of training units against Army doctrinal standards, collect embedded source data/information, operate components of the fixed instrumentation system, and provide detailed feedback to both unit and unit's chain-of-command.

---

40. (1) Chapman, *NTC*, Vol. I, pp. 49-54. (2) CAC Annual Historical Review, 1991, p. 107. (3) TRADOC ODCST SSHR, 1 Jul - 31 Dec 91, p. 90.

With regard to staffing, the regulation required FORSCOM to "provide force structure for the CTC less the TRADOC provided OPSGRP." The USAFISA determined that the base operations portion of the FORSCOM table of distribution and allowances that directly supported the operations group required review. Specifically the survey identified the need for a TRADOC-FORSCOM memorandum of understanding (MOU) concerning support of the Personnel Administration Center, Maintenance Operations, Air Force Liaisons for Nellis Air Force Base, and for A Company, Support Battalion. The memorandum, when completed, addressed the general operating procedures for the coordination of operations between FORSCOM and TRADOC.[41]

As this study was being prepared, the MOU between the commands had not been signed, and it appeared that it would not be, since too many disagreements had arisen between the two headquarters on personnel manning for the Operations Group. In September 1992, General Franks directed that—in the face of the manpower problems TRADOC was having—the CTCs look at ways to reduce military spaces in the Operations Group by contracting out training support positions. The NTC had the most potential for an action of that sort because it had a higher ratio of military to civilian authorizations than did the other CTCs. The NTC (FORSCOM) proposed to contract out a total of 119 spaces (15 officer, 1 warrant officer, and 103 enlisted) from the Video Section, fire markers, live-fire maintenance, live-fire operations and scenario writers. The spaces would be phased out gradually during FY 1994 and FY 1995, to ensure a smooth transition. The TRADOC commander approved the NTC's keeping 65 military authorizations to be used to increase the number of observer/controllers. The NTC proposed keeping 28 officer, 5 warrant officer and 32 enlisted authorizations, that is, 13 more officers and 4 more warrant officers than were being replaced by contracting. Such an action would mean, of course, that the conversion would not be a one-for-one switch and the additional officers and warrant officers would have to come from elsewhere. In September 1993, CTC representatives at the Combined Arms Command, at the direction of General Franks, informed the Chief of the NTC Operations Group that there would be no such increase in the Operations Group table and that any restructuring had to be done "in-house."[42]

---

41. (1) AR 350-50, Combat Training Center Program, 27 Jun 88, p. 2. (2) CAC Annual Command History, 1991, p. 107.

42. (1) CAC PROFS Bulletin Board, CTC Dir, CAC-T, 9 Sep 93; 7 Oct 93. (2) Briefing, ODCST, CTC Quarterly Review, Hampton, Va., 27-28 Oct 93, subj: NTC Ops Grp Contract to TDA Conversion Update. (3) PROFS Messages, Capt. Michael Worth, ODCST to TRADOC Office of the *(Continued)*

On 27 September 93, Maj. Gen. Carl G. Ernst, the TRADOC Deputy Chief of Staff for Training, was briefed on the situation for the purpose of determining who would "pay the bill" for the 13 officer and 4 warrant officer decrement. Ernst's guidance was that TRADOC schools not be directed to give authorizations to the NTC. However, school commandants could volunteer spaces. In addition, all switches would be one-for-one. In an effort to break the impasse and to conduct "a good, tough analysis of O/C TDA positions" at all the Combat Training Centers, Brig. Gen. Joe N. Frazar III, in his capacity as CAC Deputy Chief of Staff for Training created a cell at CAC. The group's mission was to take a fresh look at the functions of the operations groups' tables considering their responsibilities for safety, assessment, after action reviews, training unit coverage, and analysis. The question of contracting civilians at the NTC, probably for the Training Analysis and Feedback Division, was only a part of that effort. Brig Gen. Frazar's efforts were ongoing at this writing. Whatever the outcome, the result would mean fewer military personnel at the NTC and JRTC.[43]

The Leader Development Program

Forces Command Regulation 350-50 of June 1991 also established procedures for implementing a Leader Development Program designed to enhance the warfighting and military decision-making combat skills of brigade and battalion commanders and their battle staffs prior to a unit's rotation to the NTC, as well as to the other two maneuver training centers. The courses were conducted by O/C subject matter experts for active component forces on site at each center. The emphasis during the pre-rotation period was on planning, the synchronization of combat assets, team building, and battle drills. Developers saw the program as an integral part of the maneuver training center experience that could provide consistency and transition to a unit's maneuver training scenario. The focus was balanced

---

42. (Continued) Command Historian, 15, 22 Dec 93. The contracting issue with regard to the NTC Operations Group went back at least to 1988 when a Contract Analysis Study—directed by General Vuono, CSA, and conducted by CATA—investigated options to meet the manpower requirements of all the CTCs, by contracting. The group looked at all aspects of contracting at the CTCs and analyzed a full range of options. However, when the study was briefed to General Vuono, he directed that the study group look for additional options. See Msg, Cdr TRADOC to distr, 192025Z Jan 88, subj: Combat Training Center (CTC) Contract Analysis Study, TRADOC AHR CY 1988.

43. (1) CAC Profs Bulletin Board, CTC Dir, CAC-T, 7 Oct 93; 12 Nov 93. (2) Briefing, ODCST, CTC Quarterly Review, Hampton, Va., 27-28 Oct 93, subj: NTC Ops Grp Contract to TDA Conversion Update. (3) PROFS Msgs, ODCST to TRADOC OCH, 15, 22 Dec 93.

between the decision-making process and the execution of operations plans and orders.

Officers taking part in the 6-day program—offered twelve times a year—prepared operations plans for tactical missions identical to missions assigned training units. Subsequently, the group was briefed on the training unit and OPFOR tactical plans before observing the execution of the training operation and taking part in the after action review. After action reviews were conducted with the same formality as during unit rotations. Opportunity was given for program participants to discuss and compare plans and concepts with the executed plan. Each course at the NTC was, in accordance with FORSCOM Regulation 350-50, of three days duration. The TRADOC Operations Group was responsible for the Leader Development Programs, which were conducted by the observer/controllers with assistance from contractor coaches.[44]

Organizational Changes, 1985-1993

The original AR 350-50 (1980) and its successors had placed overall responsibility for NTC policy in the Office of the Deputy Chief of Staff for Operations and Plans, Department of the Army. Planning and programming for the resources required for research, development, and procurement of materiel to support the NTC fell to the Department of the Army Deputy Chief of Staff for Research, Development, and Acquisition (RD&A). The functional aspects of RD&A were the responsibility of the U.S. Army Materiel Development and Readiness Command (DARCOM).[45] The Forces Command operated the training center as a FORSCOM training facility and provided the force structure for the OPFOR and base operations. Forces Command also appointed the NTC commander who commanded all units and elements assigned to the NTC. TRADOC's responsibilities were to maintain and operate the training environment, oversee the operation of the instrumentation system, and develop the operational scenarios. As previously noted, the TRADOC element responsible for those functions at the NTC was the TRADOC Operations Group. the "Ops Group" was the heart of the TRADOC presence at Fort Irwin.[46]

---

44. CTC Issue Sheet, 3 Apr 96., subj: Leader Training Program (LTP).

45. DARCOM was retitled the U.S. Army Materiel Command in 1984.

46. For detailed discussion of the TRADOC Operations Group's activities at the NTC, see Chapman, *NTC*, Vol I, pp. 343, 52-53.

As the NTC matured and the Combat Training Centers program concept took shape, FORSCOM's organizational structure, based in the G-3 (operations) at Forces Command headquarters at Fort McPherson, Ga., seemed to change little. The TRADOC Operations Group was not to be so fortunate. The organizations to which the NTC TRADOC element had to report seemed constantly to be changing. Under the NTC Development Plan of 1979, the U.S. Army Combined Arms Center at Fort Leavenworth had overall responsibility for the training environment at the NTC, a role it fulfilled through its Combined Arms Training Development Activity (CATRADA) at Fort Leavenworth.[47] CATRADA, in turn, passed that function on to its Unit Training Directorate, which discharged its responsibility through its NTC Division. From 1978 to mid 1980, the CATRADA commander, a brigadier general, reported directly to the major general commanding the CAC Combined Arms Combat Development Activity (CACDA). In April 1980, CAC commander Lt. Gen William R. Richardson freed CATRADA from the CACDA chain of command and directed it be reorganized as a new mission activity.[48]

That alignment lasted until 1 October 1982 when CATRADA was disestablished and its training directorates realigned under the U.S. Army Command and General Staff College (CGSC). Under that arrangement CAC's training missions took a back seat to the traditional missions of the college and had to share the attention of the CGSC deputy commandant with more than twenty other college agencies and directorates. The resulting turbulence in the training development community had a severely detrimental affect on the Operations Group at Fort Irwin as it struggled to stabilize a new and untried training system for the Army. In July 1984, General Richardson, by then TRADOC commander, directed that the training directorates at CAC, including jurisdiction for the NTC Operations Group, be separated from the CGSC and formed directly under CAC headquarters into a new Combined Arms Training Activity, or CATA. Direct responsibility for the NTC Operations Group fell to the aforementioned National Training Center Programs Office which was created in February 1985 and aligned directly under CATA headquarters. Later in 1985, the Center for Army Lessons Learned (CALL) was created as a directorate of CATA primarily to improve the NTC data collection and analysis program. At that time, the

47. CATRADA was established on 1 Dec 76 as part of General William E. DePuy's and Maj. Gen. Paul F. Gorman's efforts to make the Army's training development and combined arms training efforts more coherent and efficient. See CAC AHR 1987, p. 267.

48. The specific responsibilities of the NTC Division and the reasons for the CAC reorganization of 1980 are detailed in Chapman, *NTC*, Vol. I, p. 52.

CATA Combined Arms Integration and Standardization Directorate established a separate NTC Lessons Learned team, which was absorbed into CALL five months later. The complicated data collection and NTC "lessons learned" issues are examined in detail in Chapter VIII.[49]

Late in 1986, with the "umbrella" concept for the NTC and the other combat training centers under development, the NTC Programs Office was renamed the Advanced Collective Training Facilities (ACTF) Programs Office. On 1 February 1987, the ACTF Programs Office was separated from CATA headquarters and established as a CATA directorate and renamed the Combat Training Centers (CTC) Program Directorate. That development was a result not only of the CTC concept but of the fact that CATA had become TRADOC's executive agent for the NTC in reality as well as in theory. TRADOC involvement at Fort Irwin, which had lagged after the disestablishment of CATRADA, had by 1987, been reinvigorated.[50]

Aligned under the CTC Directorate of CATA, the NTC Operations Group enjoyed a relatively stable organizational arrangement until the fall of 1990. At that time, all of TRADOC, including the Combined Arms Center, formally initiated changes that were primarily a response to world-changing events and to public pressure to reduce the size of the military and reduce costs. At that time, also, CAC was redesignated as the Combined Arms Command. CATA became the Combined Arms Command-Training (CAC-T) when its commander received the new position of Deputy Commanding General for Training. At the same time, CAC-T gained from TRADOC headquarters the responsibility for maintaining and upgrading the instrumentation systems at the combat training centers and proponency for tactical engagement simulation. As part of the reorganization, the CTC Programs Directorate acquired the new name of Combat Training Center Directorate, but with little change in mission. The Operations Group at Fort Irwin now reported to the CAC Commander through the CAC-T Commander/DCG-Training. At this writing, a proposal to return many functions of CAC, including those of the CTC Directorate, to TRADOC headquarters awaited the decision of the Chief of Staff of the Army.[51]

The above discussion depicts the organizational background against which the National Training Center TRADOC Operations Group operated

---

49. CAC AHR, 1987, p. 268; 1990, p. 81. CATA was established provisionally on 1 Jul 84 and officially on 22 May 1985.

50. (1) TRADOC AHR 1987, p. 35. (2) CAC AHR 1987, pp. 268-69.

51. (1) CAC AHR 1990, pp. 15, 81-82, 110-11. (2) TRADOC ACH 1989, pp. 7, 15.

over the decade following 1984, as it strived to continuously improve the training experience for the FORSCOM units who visited Fort Irwin. During those ten years since General Wickham had declared the NTC a success, the training center at Fort Irwin had served as the model for three more training centers and had become the senior and largest facility in the Combat Training Center Program. While relations between TRADOC and FORSCOM and, indeed, between TRADOC headquarters and the Combined Arms Center were not always harmonious, there was no disagreement as to the importance of the NTC and its training program to combined arms training for the Total Army.

CHAPTER II

The Focus of Training

From the time of its conception, the developers of the National Training Center had seen it not only as a potentially revolutionary improvement in military training, but also as an evolutionary process. That is, they did not envision the day the NTC would reach a point in development where it could be declared "complete." Indeed, in the almost ten years since 1984 when General Wickham had made his "go, no go" decision in favor of continuing and expanding the NTC, much had changed. "Heavy/light" (light units attached to heavy task forces) and light/heavy (heavy armor and mechanized infantry forces attached to light forces) rotations had been introduced, and the training center had completed its first rotations involving contingency operations. Divisional cavalry squadrons had also taken part in the training exercises, and rotations had been conducted with motorized forces from the 9th Infantry Division. One thing, however, had not changed. The "futures" and operations plans of 1986 had called for the NTC to move toward brigade level operations, that is, the training of three "real" heavy battalions instead of the current two battalions with a brigade slice to serve as higher headquarters. At this writing only two battalions were being trained during each rotation, although the level of participation by brigade staffs and support elements had increased. The subject of adding a third actual battalion during each rotation, however, had been hotly debated over the years.

The "Brigade-Level" Controversy

How the brigade should be exercised at the National Training Center was a two-part question. The first issue was the level of participation of the brigade "slice." What was the appropriate command level for NTC training? More specifically, who should evaluate the brigade commander and his staff and the brigade slice elements? The NTC concept as of the end of 1984 was based on training two "full-up" battalion task forces (TF). One TF participated in tactical engagement simulation under control of its

brigade headquarters, and the Operations Group evaluated that battalion. The Operations Group provided a notional division headquarters but did not evaluate the brigade. The brigade evaluated itself through its chain of command, and other elements of the brigade, such as field artillery, also evaluated themselves. While one battalion was conducting force-on-force maneuvers against the OPFOR, the second battalion task force took part in live-fire exercises and was also evaluated by the Operations Group. During the rotation, the two battalions exchanged places so that both could participate in live-fire and force-on-force training. Almost from the beginning there had been a theoretical debate over whether the focus of training should be on the battalion, or at a higher level. A second question concerned the practical pros and cons of actually fielding a third battalion rather than a "notional" one.

The controversy over what level of training ought to be provided at the NTC went back at least to August 1983 when the Field Artillery School proposed elevating the level from battalion to brigade. Some senior Army officials believed that training for a full three-battalion brigade would provide a more realistic battlefield environment and enhance training in command and control (C^2). Many top level Army leaders had remarked upon visiting the NTC and observing the force-on-force maneuvers, that C^2 was a serious problem for almost all BLUFOR commanders. Another factor behind the re-look at the level of the training at Fort Irwin was criticism from some members of Congress that the NTC was too expensive and that the Army was not taking full advantage of its investment there. Perhaps training three battalion task forces at once would make the investment easier to justify and be more efficient. In July 1984, a study sponsored by the Army Deputy Chief of Staff for Operations and Plans, Lt. Gen. Fred K. Mahaffey, looked at a number of the key issues associated with the NTC as the training center neared the end of its first phase of development. One of the alternatives the study suggested for improving the training program at the NTC was "true" brigade level training.[1]

The TRADOC commander at that time, General William R. Richardson, was quick to react. In a visit to Lt. Gen. Mahaffey on 28 June 1984, Richardson expressed his opposition to "gearing NTC up to the brigade level." Again, two weeks later, also in a letter to Mahaffey, the TRADOC commander declared that "we must be absolutely adamant in protecting the battalion task force orientation at NTC." Richardson's reference was to both the proposed concurrent training of three battalions, and

1. Ltr, General William R. Richardson to Lt. Gen. Fred K. Mahaffey, 13 Jul 84, General William R. Richardson Papers, U.S. Army Military History Institute, Carlisle Barracks, Pa. [hereafter cited as Richardson Papers].

to the evaluation of brigade operations. After a visit to the NTC in the fall of 1985, he wrote in a trip report that "we are not out to grade brigade commanders." Richardson's strong objections were based on his belief that such a change would:

> adversely affect the level of command where ground combat is actually conducted—the battalion level—and the resources bill to do it right will be unacceptable. At least for now the TRADOC position is, as it has always been, to stay with battalion task force operations using a brigade slice.

Richardson feared that full brigade level training would lead to underemployment of the battalion and lower echelons. The TRADOC commander also pointed out that the NTC and its OPFOR, Operations Group, and instrumentation had been designed to support only two battalions per rotation. He feared the Army might find itself with one more battalion to train and without the resources to increase the OPFOR, other personnel, and the instrumentation system. Estimates were that Fort Irwin's maneuver and cantonment areas would have to support as many as 1,200 more personnel. Such a situation would mean that the quality of the training offered at the NTC would "inevitably suffer." Richardson's concerns were shared by a number of the observer-controllers who thought that brigade level training "might degrade the battalion level training."[2]

The FORSCOM commander, General Richard E. Cavazos, also objected to plans to change the level of training at the NTC, albeit for different reasons. Cavazos objected on grounds that such a move would escalate transportation, evaluation, and support costs—much the same arguments FORSCOM had made against the establishment of the NTC in the first place. In a message to General John A. Wickham, who had only recently become Army Chief of Staff, General Cavazos expressed his opinion that those responsible for the training environment at Fort Irwin should keep the focus on the task force and continue to "work hard to build on experience and progress." As for Wickham, at this point he seemed to sidestep the issue. In an "NTC Policy Statement" of 7 September 1984, Wickham

---

2. (1) MFRATCG, 28 Jun 84, subj: Discussions with Lt. Gen. Mahaffey. (2) Ltr, General Richardson to Lt. Gen. Mahaffey, 13 Jul 84. (3) MFR, 6 Jun 86, subj: Visit to the NTC. All documents in Richardson Papers. (4) General William R. Richardson, Trip Report, 7 Nov 85, subj: Visit to the National Training Center. (5) Last quotation is from the Clark interview, 8 Jul 92. Maj. Gen. Clark was at the time in question, the Chief of the Operations Group at the NTC. Clark's remark concerned the attitude of the O/Cs only; he supported a move to rotations with three maneuver battalions. As previously noted, at this early date, the brigade elements at the NTC evaluated themselves.

described the challenge for the future as the continuation of "training for battalion task force operations" while attempting to "find ways to expand the center's capability to promote innovation." One possibility, according to the statement, was to "increase the direct involvement of brigade headquarters, CS [combat support], and CSS [combat service support] with ongoing NTC training." That rather noncommittal approach made General Richardson and his staff nervous. Richardson believed the DCSOPS, Lt. Gen. Mahaffey, had written the message.[3]

Most of the aforementioned debate over brigade level exercises and the evaluation of the brigade elements took place in mid- to late-1984. By the end of that year, Wickham had directed that the brigade be given greater emphasis at the NTC, and Richardson was forced to relent somewhat. After a visit to the NTC in November, he wrote that "they asked my views on brigade and division level exercises. I told them that I would be in favor of trying some brigade exercises whenever they got the additional real estate." Perhaps the mention of division level training caused him to cut his losses. Or maybe he was more prophetic than he knew, in view of the difficulty the Army was to have with land acquisition. That story is related in Chapter III.[4]

Wickham's position was to become clearer in late 1986, after Richardson's retirement. It will be remembered that it was Wickham who directed the development of a futures concept for the NTC, an effort that had begun in 1985.[5] The "Futures and Operational Concept," completed in 1986 contained a provision for the NTC to move toward a three-battalion configuration and provided for evaluation teams for all "slice" units. Meanwhile, Richardson's successor in June 1986 as TRADOC commander, General Carl E. Vuono, had joined those supporting brigade level training at the NTC. In early 1984, then Lt. Gen. Vuono, as Deputy Commanding General of TRADOC and CAC commander concurrently, had instructed Brig. Gen. Edwin S. Leland, Jr., then NTC commander, to do the first brigade level rotation. That rotation, with the 4th Infantry Division, took place in June 1984. Two battalions were linked up and attacked on a convergent attack. Such a rotation was not repeated, primarily because of the

---

3. (1) Msg, Cdr FORSCOM to HQDA, 231900Z Aug 84, subj: Alternative Concepts for NTC. (2) Msg, CSA to distr, 071625Z Sep 84, subj: NTC Policy Statement, with handwritten note signed by Richardson attached, Richardson Papers.

4. (1) MFR, 9 Nov 84, subj: Visit to West Coast. (2) MFR ATCG, 7 Nov 85, subj: Visit to the National Training Center.

5. The Operational and Futures concepts, as well as the CTC Master Plan are discussed at some length in Chapter I.

aforementioned objections of the O/Cs. But Vuono did not give up. In December 1986, after discussions with NTC officials at Fort Irwin, Vuono had his staff prepare a briefing for Wickham, to be presented in January 1987, seeking approval for brigade operations at Fort Irwin.[6]

On 23 January 1987, General Wickham approved the Advanced Collective Training Facilities (subsequently renamed the Combat Training Centers program) concept, which included among other things, an outline for the proposed expansion of the NTC to support brigade operations including a division tactical command post, an action which would make necessary a corresponding expansion of the Operations Group and the OPFOR. The OPFOR would have to be brought to full brigade strength so that the NTC would have a viable OPFOR in terms of numbers of combat systems to oppose three heavy task forces, thus maintaining force ratios. In addition, the instrumentation system would have to be upgraded to replicate the capabilities of the most modern of potential enemies' equipment. Originally, this expansion was set for FY 1990. Subsequently, the projected start date was moved forward to FY 1993 and then to FY 1994. Meanwhile, in October 1987, the NTC began to train and evaluate the brigade commander and his staff and to evaluate the brigade slice. Along with that change came an increase in the kinds of tasks the brigade staff performed in order to enhance the realism of each rotation for the brigade commander and his staff. An eight-man O/C team was added to evaluate the brigade headquarters, and O/C teams were created to evaluate field artillery and Army aviation participation.[7]

Thus one of the "brigade level" controversies—the evaluation of the brigade elements—seemed settled. Not so for the other. As the milestones moved up, funds and end strength were reduced. Enthusiasm for the idea also seems to have waned. At a meeting of the General Officer Executive Committee in March 1991, the committee declined to take action on plans for the expansion of the NTC to a three-battalion training facility, calling the idea "thought provoking for the future." At the end of 1993, the two-battalion concept remained in place. The closest the NTC had come to true brigade level operations at that point was the participation of both

---

6. (1) NTC Futures Concept, p. v. (2) MFR ATCG, 5 Dec 86, subj: Discussions at NTC. (3) Clark Interview.

7. (1) TRADOC AHR, CY 87, p. 37. (SECRET — Info used is UNCLASSIFIED). (2) TRADOC AHR, CY 88, p. 153. (3) NTC Futures Concept, p. iv. (4) Maj Jeff Marrin, Deputy Chief of the NTC Observations Division of the Operations Group at the NTC, interview with Brig Gen Paul E. Funk, Commander of the NTC, September 1988 to October 1989. Eighteen interviews with O/C personnel are available in the TRADOC Military History Office, Fort Monroe, Virginia and at the CAC History Office, Fort Leavenworth, Kansas. Each interview is completely cited only on first mention. Thereafter only the interviewee's last name is used.

battalion task forces in the same engagement simulation exercise, an event that occurred at some point in each rotation, and the introduction of "heavy/light" rotations, discussed below. In the latter case, the brigade commander usually had the opportunity to maneuver two heavy battalion task forces and one light battalion task force for part of a rotation. Brig. Gen. Paul E. Funk, NTC commander from September 1988 to October 1989 and a strong advocate of actual brigade level training, dubbed the heavy/light approach to "full-up" brigade training, the "bare bones approach." Despite the continued controversy and indecision concerning brigade operations, the Army went ahead with plans to acquire the additional personnel, dollars, and training devices for an expanded mission. The Army also continued efforts to acquire an additional 260,000 acres of land adjacent to Fort Irwin.[8]

Opinions on what the focus of training should be at the NTC differed widely among those closest to the conduct of the maneuver exercises. For example, two successive chiefs of the Operations Group disagreed as to what the effect of brigade operations might be on the training of the battalion and below. Col. William L. Shackelford, the chief from January 1982 through September 1984, during which time the debate heated up, believed the focus should remain on the battalion task force. In his words, "Brigade Operations stick the brigade commander in the command post. That way he can't be performing the mentoring he is responsible for." Col. Wesley K. Clark succeeded Shackelford as chief of the group and served in that post until April 1986. He returned in October 1989 as NTC commander. Clark later said that he "looked at it as a bonus training opportunity. You were already going through the motions of it to get the best you could for the soldiers who were out there, without detracting from the battalion." The deputy of the mechanized infantry trainer team at the NTC from June 1987 until January 1990 agreed with Clark. "The battalion doesn't feel it's out there on its own. The brigade has the potential to fight the deep battle—that is coordinate USAF assets and Army aviation and artillery."[9]

Even in the absence of the increased realism that some commanders believed could result from the simultaneous exercise of three battalions, many senior NTC officials believed the increased participation of the brigade was

---

8. (1) CAC AHR, CY 91, p. 87. (2) NTC Futures Concept, p. iv. (3) Funk Interview. Brig. Gen. Funk believed, however, that if standards had to be relaxed for lack of land and money, the training level should remain where it was in 1989. Brig. Gen. Funk left the NTC in October 1989 to command the 3rd Armored Division, USAREUR & Seventh Army. He commanded the 3rd AD under VII Corps in Operations Desert Shield and Desert Storm. In July 1992, he became commanding general of the U.S. Army Armor Center and Fort Knox.

9. (1) Telephonic interview with Col. (Ret) William L. Shackelford, 6 Jan 94. (2) Clark Interview, Romjue and Chapman, 8 Jul 92. (3) Major Beacon, interview with Lt. Col. Vona, 30 Mar 90.

an enhancement to training. Lt. Col. Michael Ryan, NTC Chief of Plans and Operations from March 1988 to the spring of 1990, observed that:

> Earlier the brigade was simply a conduit for orders that came out of Plans and Operations, Operations Group, since we wrote a brigade order, handed it to them and they passed it on [to the task force]. Now we write a division order and the brigade has to respond. They have to plan it and take care of getting their assets synchronized.[10]

For training the brigade assets, the Operations Group employed a "talk, walk, run routine." During the first days of a rotation, a brigade received the operations order twenty-four hours in advance of passing it to the TF commander. By the last four days of the rotation, when the brigade typically had the greatest assets (artillery, aviation, logistics, etc.), it had to maneuver in "real time," attempting to execute orders as quickly as possible in order not to compromise planning time for the battalions. In addition, the brigade commander and his staff had to interpret whatever intelligence information was available and make all their own reports. During these final days of the rotation, the object was to have the brigade commanders go through what Lt. Col. Ryan termed "the full graduate program."[11]

The issue of brigade level training remained unresolved, although no longer hotly debated, at the close of 1993. Reduced defense budgets, the still unresolved issue of the acquisition of additional land, and manpower shortages served to keep the issue on hold.[12] Meanwhile, another issue had arisen that would claim the attention of those responsible for the NTC training program and those throughout the Army concerned with force structure. That issue was the advantages versus disadvantages of heavy/light rotations.

The Heavy/Light Controversy

The United States Army continually monitored its force modernization and structure to assure that it was capable of deterrence, and if

---

10. Maj. Beacon, NTC Operations Group, Observation Division, interview with Lt. Col. Michael Ryan, Spring 1990.

11. Ibid.

12. Land acquisition efforts are discussed at length in Chapter III.

necessary, defeat, of any potential enemies.[13] From the early 1980s to 1989, the year that the world situation changed so dramatically, the Army focused its development to respond to threats at both ends of the spectrum of conflict. At one end of the spectrum, the focus was modernization of the heavy division to deter the Soviet threat on the mid- to high-intensity battlefield in Europe. Heavy forces were the implementing element of AirLand Battle doctrine of the 1980s and early 1990s. At the other end of the spectrum, light divisions were developed for the world's "contingency" areas to help deter possible Soviet surrogate and Third World aggression. Interest in light forces seemed to increase in parallel with the Reagan presidency's (1981-1989) defense buildup. But all divisional units were specialized and focused on fighting within the structural constraints of their division. Outside the division structure, until the late 1980s, little recent experimentation had been done with the "cross-attaching" of various heavy and light force combinations.

However, as early as 1982, Maj. Gen. John R. Galvin, then commander of the 24th Infantry Division (Mechanized) at Fort Stewart, Ga., had written that the Army of the future would have to rely on both heavy and light forces. Galvin also pointed out the advantages of using those forces together. In short, "the heavy/light combination equals more than the sum of its parts." Galvin's conclusions were based, in part, on two training exercises conducted in 1982. One such exercise pitted his 24th Infantry Division's mechanized units against elements of the 101st Airborne Division (Air Assault) from Fort Campbell, Ky. and the 194th Separate Armored Brigade based at Fort Knox, Ky. (Exercise Bold Eagle 82). The other exercise saw a battalion task force of the 24th Infantry Division deployed to Egypt by sealift to join a battalion of the 82d Airborne Division from Fort Bragg, N.C. However, although heavy and light forces might engage in special exercises together, routinely they trained separately.[14]

Several years later, in the summer of 1986, Army Chief of Staff General John A. Wickham, Jr., directed TRADOC to develop heavy/light force doctrine and training programs in response to the possibility that light divisions programmed for contingency areas could face high-intensity realities. Thus, in the second half of the decade, the Army began looking at what the effects might be of operations with mixed heavy and light forces (including Special Operations), within the corps boundary. It was against this

13. In this discussion, the term "heavy/light" refers to operations in which a light infantry battalion from another division was attached to the heavy force brigade commander during the rotation.

14. Romjue, *Army of Excellence*, pp. 112-13.

background that the controversy over—and the initiation of—heavy/light rotations at the NTC took place.[15]

One of the roots of the controversy surrounding the attachment of light units to heavy armored or mechanized infantry units at the National Training Center, could be found in the debate over a training center for light units similar to the heavy-oriented NTC. Concurrent with the debate over brigade training at the NTC, Department of the Army, TRADOC, and FORSCOM officials began considering a combat training center for the training of airborne, air assault, Ranger, special operations, and light infantry battalions in low- and mid-intensity conflict. With the success of the overall force modernization effort, which had been largely dedicated to offsetting Soviet quantitative superiority in Europe, emphasis was increasingly placed on contingency force operations, with direct implications for joint and combined operations.

In October 1983, General Richardson and his training staff at TRADOC began developing a concept for a light infantry training center. For nearly three years, Maj. Gen. Maurice O. Edmonds, TRADOC Deputy Chief of Staff for Training, and his successor, Maj. Gen. Johnnie Corns, struggled to convert what had been Richardson's vision into concrete plans for a Light Forces National Training Center (LFNTC). The planning for the future training of light forces resulted in a protracted controversy over such training at the NTC. The basic question was whether training a mixture of heavy and light units at Fort Irwin was better than establishing a separate facility dedicated only to training light forces. In general, TRADOC's senior training community objected to any change in the NTC's "capacity and focus as the world's preeminent heavy battalion task force training facility." TRADOC commander Richardson observed that "employment of one light and one heavy battalion under brigade control would not be in keeping with NTC training objectives." Besides, the terrain at Fort Irwin was "decidedly tank country."[16]

In any case, TRADOC argued, training heavy and light battalions together under a brigade headquarters was not in keeping with doctrine. However, senior officials at FORSCOM, including the commander,

---

15. Chapman, *NTC*, Vol. I, p. 145.

16. (1) Enclosure, subj: TRADOC Position on Light Force NTC Training to ltr, Col. Louis Hightower to Cdr FORSCOM, 29 Jan 85, subj: National Training Center Long Range Development (1st quotation). (2) Msg, Cdr TRADOC to CSA, 172000Z Sep 84, subj: NTC Training for Light Forces (2d quotation), Richardson Papers. The roles of Generals Richardson, Sennewald, Cavazos, Galvin, Lt. Gen. Vuono , and others are discussed at length and in depth in Rodler F. Morris's forthcoming "Joint Readiness Training Center." Morris also includes a detailed discussion of the debate surrounding the establishment of the training center for light forces.

General Robert W. Sennewald, strongly favored the inauguration of heavy/light rotations at the NTC rather than the establishment of a new light training facility. Sennewald was primarily concerned with the costs involved and with a potentially unreasonable demand for scarce manpower. The commander of the 24th Infantry Division, Maj. Gen. Galvin supported Sennewald's position on grounds that at the NTC, light forces could be tested against a heavy opponent, and light forces capacity to support heavy units could be assessed. Speaking at an Army Commanders' Conference in August 1984, NTC commander Brig. Gen. Edwin S. Leland briefed several potential innovations at the NTC including heavy/light force rotations, the acquisition of additional land, and the construction of MOUT (military operations on urban terrain) facilities. Richardson and his supporters considered Leland's proposals to be threats to the establishment of a light forces NTC. The heavy/light mix could diminish or eliminate the LFNTC requirement. Costly projects like MOUT facilities, which became much more desirable when light infantry was plugged into the NTC equation, could jeopardize potential funding for a light forces NTC. The reserve components generally agreed with the light force training center concept, but were concerned about the potential loss of their training facilities at Fort Chaffee, Arkansas, the proposed temporary site for such a training center.[17]

Finally, Lt. Gen. Carl E. Vuono, the CAC commander, sought to bypass the "either-or" nature of the debate. He suggested that a combination of a dedicated light force facility and training for a mixture of heavy and light forces at the NTC would offer optimal training opportunities for the Army's light forces. In short, heavy/light NTC rotations and the LFNTC were not competing but mutually complementary concepts. Vuono convinced General Richardson of the wisdom of that approach. Meanwhile, in January 1984, FORSCOM scheduled the first heavy/light rotation at Fort Irwin—for the 24th Infantry Division—in late 1985. Plans at that point were to conduct four such rotations in FY 1986; four in FY 1987; five in FY 1988; and six in FY 1989.[18]

In October 1986, General Wickham approved the concept of a training center for light forces, which had been by then redesignated the Joint Readiness Training Center, or JRTC. The new facility was established temporarily at Fort Chaffee, Ark. As noted above, the facility conducted its

17. Leland Briefing, Army Cdrs' Conference, 21-22 Aug 84. Leland also proposed clearance of several artillery impact areas to allow more terrain to be used for force-on-force training and a light forces live-fire facility.

18. (1) Msg, Cdr, TRADOC to CSA, 172000Z Sep 84, subj: NTC Training for Light Forces. (2) Memo, Cdr CATA to Cdr CAC ATZL-TAU-NP, 3 Apr 85, subj: National Training Center Executive Committee Meeting, 12 March 1985.

first rotation in October 1987. Like the NTC, the JRTC featured an operations group and an OPFOR. Unlike the NTC, the JRTC was completely a TRADOC project until June 1993, when it was transferred to a permanent site at Fort Polk, La. to become a joint TRADOC-FORSCOM operation.[19]

Meanwhile, the first heavy/light rotation at the NTC took place during rotation 85-06 in March 1985. On that occasion, the 101st Airborne Division (Air Assault) deployed as part of an emergency deployment readiness exercise with a 500 man task force, and trained for five days during a rotation featuring the 1st Infantry Division (Mechanized). The light task force was given the missions of the passage of lines, raid, defend in sector, and forward insertions. At their regular meeting in early April 1985, the NTC General Officer Executive Committee received a report from NTC commander Brig. Gen. Edwin S. Leland, Jr. on this first integration of air assault and heavy forces at Fort Irwin. Leland reported that light forces

During heavy/light training at the NTC, soldiers of the 7th Infantry Division (Light) prepare an M119 105-mm. light towed howitzer for action.

19. (1) TRADOC ACH, 1989, p. 207 (FOR OFFICIAL USE ONLY — Information used is not protected). (2) Current History Archives, 1993, TRADOC Office of the Command Historian.

possessed effective defense, ambush, and reconnaissance capabilities when deployed with heavy forces. He also noted effective use of attack helicopters. He summed up his assessment by remarking that "coordinated Air Assault/Heavy Forces Employment can be very effective but a great deal of additional doctrinal/training work is needed." But the change in the force mixture for this first heavy/light exercise also put a strain on the O/C distribution, since an O/C team to evaluate light forces had to be drawn from mechanized infantry and armor O/C personnel. Generally satisfied with the outcome of Rotation 85-06, FORSCOM left in place plans for a second heavy/light rotation in September of 1985 when a 7th Infantry Division (Light) task force would augment a 4th Infantry Division (Mechanized) heavy brigade.[20]

During FY 1986, the NTC hosted two heavy/light rotations.[21] In late February and early March, the 101st Airborne Division accompanied elements of the 24th Infantry Division (Mechanized), and a task force of the 2d Brigade of the 7th Infantry Division (Light) accompanied the 197th Infantry Brigade (Mechanized) (Separate).[22] After the two rotations, numerous conclusions were drawn, and the debate concerning the feasibility of employing light infantry with heavy forces in a mid- or high-intensity war environment continued unabated. It should be noted that the force mixture question was axiomatic to the larger debate surrounding new light infantry divisions that arose in the public forum and within the Army in 1984. In the spring of 1987, writing in *Military Review*, the brigade commanders during one of the FY 1986 rotations—Col. William W. Hartzog of the 197th Infantry Brigade (Mechanized) and Col. John D. Howard of the 2d Brigade of the 7th Infantry Division (Light)—assessed the strengths and weaknesses of both heavy and light forces, separately and combined. (The force structure of those two units is displayed in Chart 2.) In general, as heavy/light task force experience accumulated at the National Training Center, the assessments by those involved of the performance of troops during heavy/light rotations was remarkably consistent. That is, participants and observers over a near ten-year period noted that rotating units in heavy/light rotations continued to make the same mistakes and to do the same things well.[23]

---

20. Memo ATZL-TAU-HP, Cdr CATA to Cdr CAC, 3 Apr 85, subj: NTC Executive Committee Meeting, 12 March 1985.

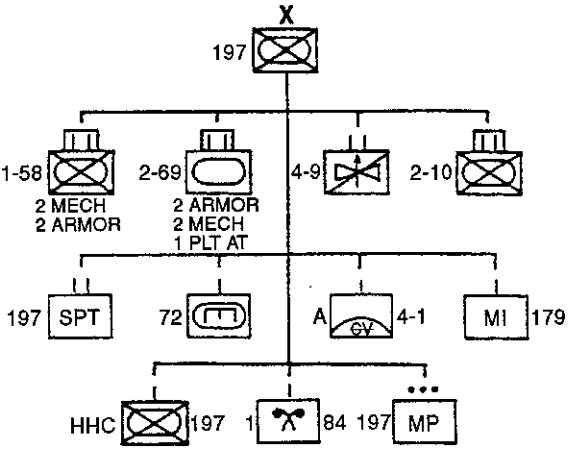
21. In response to the Gramm-Rudman-Hollings budget constraints, FORSCOM cancelled three heavy/light rotations in FY 1986.

22. FORSCOM Annual Historical Review, FY 1986, pp. 161-62.

23. Col. William W. Hartzog and Col. John D. Howard, "Heavy/Light Operations," *Military Review*, April 1987, pp. 24-33.

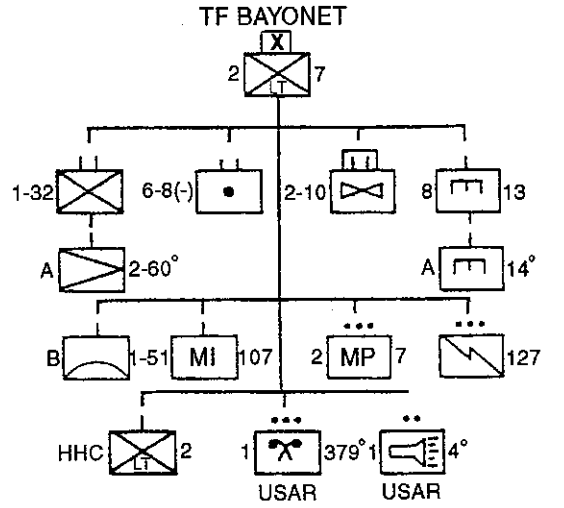
Chart 2
Heavy and Light Brigades

197th Infantry Brigade (Mechanized) (Separate)



MECH - Mechanized
PLT AT - Platoon (antitank)
SPT - Support
CV - Chaparral-Vulcan
MI - Military intelligence
MP - Military police
HHC - Headquarters and headquarters company

2d Brigade, 7th Infantry Division (Light)



TF - Task force
LT - Light
MI - Military intelligence
MP - Military police
HHC - Headquarters and headquarters company
USAR - US Army Reserve

Source: Col. William W. Hartzog and Col. John D. Howard, "Heavy/Light Operations," *Military Review*, April 1987, p. 25.

A soldier with the 82d U.S. Airborne Division fires an M72, the standard Light Antitank Weapon. While still used extensively by a number of armies, the LAW's effectiveness had been reduced by advances in armor technology.

The September 1986 rotation took place amid the ever-present rocks, sand, sagebrush, wadis, rugged mountains, scrub vegetation, and dry lake beds of the Mojave Desert. Even in late winter, the temperatures ranged into the 90s. Each task force brought to the NTC its own objectives tailored to its own training needs. The commanders found that the need for "thought, work, and practice in the heavy/light arena before the battle starts" was crucial to success. That conclusion "highlighted the potential realities of 'come-as-you-are' warfare." Hartzog and Howard also concluded that on a mid-intensity desert battlefield, light forces could be very productive if employed with the proper METT-T (mission, enemy, terrain, troops and time available) analysis and if both task forces remained acutely aware of light force vulnerability. Light forces should not operate on the desert floor after

first light, but rather from concealed positions. In addition, extreme weather such as rain, heat, and cold had a different impact on light forces compared to heavy forces. "'Heavy/light' doctrine on a 'grand scale'" was not necessary, but the sharing of practical "how-to" information was essential. As with any military operation, success depended on cooperation, a common understanding of the mission, the commanders' mutual understanding of intent, and—perhaps most importantly—synchronization of all battlefield assets. For example, command posts needed to be co-located, signals agreed upon, and a common intelligence network established.[24]

An 82d Airborne Division mortar crew prepares an 81-mm. mortar to fire during a heavy/light rotation.

24. Ibid. Hartzog and Howard based their analysis on information gathered during four operations at the NTC. The analysis is configured according to the battlefield operating systems (BOS) of a battalion task force (command and control; intelligence; maneuver; fire support; air defense artillery; combat service support; and mobility and survivability).

Whatever the dissent registered about the light division and its capabilities, heavy/light training programs and doctrinal concepts were increasingly supported by most of the Army's senior decision-makers. In support of the increased emphasis on war plans that called for the employment of heavy and light forces together, NTC commander Brig. Gen. Horace G. "Pete" Taylor had his light infantry team prepare a report on heavy/light operations at the NTC for Brig. Gen. William J. Mullen III, commander of the Combined Arms Training Activity at Fort Leavenworth, Kansas.[25] To gather information for the report, an O/C team was assigned twenty-four hours a day to a light infantry task force undergoing fourteen days of force-on-force training. Members of the task force chain of command and its primary and specialty staff officers down to platoon level had an O/C assigned to them. Subject matter experts from the Command and General Staff College, the Center for Army Lessons Learned, the Infantry School, and the 7th Infantry Division (Light) also joined the research team.[26]

The light forces O/C report generally followed the themes of the earlier Hartzog and Howard article. When properly combined, the heavy/light force mixture provided the commander the ability and flexibility to conduct a wide range of offensive and defensive operations. In the intelligence "battle before the battle" to destroy the enemy, light forces—given the proper synchronization of intelligence and communications—had the capability to extend the battlefield and to take maximum advantage of rugged terrain. In addition, light forces, when their superior night vision capability was mixed with the thermal capability of heavy forces, could be especially effective in night operations and the occupation and preparation of battle positions, because they were hard for the enemy to find and target. With regard to fire support, the proper positioning of 105-mm. howitzers well forward to support the FLOT (forward line of own troops) meant they could provide suppression and non-lethal missions such as illumination and smoke, while freeing heavy field artillery for other missions. The light forces O/Cs believed operations at the NTC had shown that during maneuvers with heavy/light forces, detailed planning and execution of SEAD (suppression of enemy air defenses) became more critical and fire planning and fire support coordination more difficult.[27]

---

25. Shortly after the first heavy/light rotation, an O/C team dedicated to light forces was established as an element of the TRADOC Operations Group at Fort Irwin. [See April 85 GOEC report]

26. Enclosure to ltr AFZZJ-CG, Brig. Gen. H. G. Taylor to Brig. Gen. William J. Mullen III, 22 Jun 88, subj: NTC Heavy Light Observations, Insights, and Lessons Learned.

27. Ibid.

The divisional engineer battalion of the light division was small and lightly equipped, by comparison to a heavy battalion. On the other hand, mobility tasks were also lighter because fewer, lighter vehicles were required to move far less tonnage over shorter distances, and enemy obstacles were less of a hindrance to operations. While countermobility tasks were important to light division operations, the terrain at Fort Irwin required less alteration for light forces than for heavy forces. Likewise, survivability tasks were important, but there was much less to dig in. However, when supporting a heavy unit and performing mobility tasks, light forces required the support of heavy engineer assets. For example, the light division had no organic bridging capability. The light forces O/Cs at the NTC found the light forces training there to be effective obstacle breaching forces and efficient at the emplacement of mines and wire obstacles. They were much less efficient at chemical decontamination in mid- to high-intensity warfare.[28]

The air defense artillery (ADA) system in heavy/light operations could be very effective given several conditions. Light infantry division Stinger ADA missile teams were dismounted, and each two-man team carried two missiles. HMMWV (High Mobility Multipurpose Wheeled Vehicle) integration with the heavy force was imperative for ADA sustainment and missile resupply.[29] Commanders of both heavy and light forces needed to be constantly aware that the priorities in a heavy division tended to be maneuver, command and control, and then logistics; in the light division, the order tended to be reversed. Early warning had to be accomplished through the integration of all radar systems, the use of a manual SHORAD (short range air defense) system, and maintenance of the tactical communications networks. Lastly, centralized planning was essential for defense against enemy close air support and rotary wing aircraft.[30]

The greatest need for improvement in tactics, techniques, and procedures when light forces trained as support to heavy battalions was in the combat service support (CSS) system. The very nature and functions of the two types of forces made severe difficulties almost inevitable. The problems were exacerbated by the terrain at Fort Irwin. Logistics support for a heavy/light task organization required that commanders have a thorough understanding of the current, ongoing, and forecast needs of both forces. The acute problems of CSS—casualty evacuation, water and food supply,

---

28. Ibid.

29. The Stinger was a man-portable, shoulder-fired guided missile system which gave soldiers effective air defense against attacking low-level aircraft. The weapon weighed about thirty-five pounds and could be carried anywhere a soldier could carry a rifle.

30. Ibid.

construction materials, ammunition, etc.—are discussed in greater detail in Chapters V and VIII. Suffice it to say here that when the two different organizations were integrated, the commander and his staff needed to identify all the factors that would have an influence on the support of operations.[31]

From the beginning of operations at the National Training Center, many observers and numerous participants in the training exercises had remarked or written that command and control problems were the biggest factor in BLUFOR defeats. The attachment of light forces to the usual heavy forces only magnified the problem. The lack of timing and synchronization, so prevalent during most rotations, often tended to cause each of the forces to fail to use many of the assets of the other. The difference in mobility of the forces tended to reduce the flexibility of the heavy force. At the NTC, the presence of light forces made terrain management a major issue for the brigade commander. The difficulties of C^2 and the lessons learned at the NTC on the subject are discussed in Chapter VIII. "Regardless of how light infantry forces might be employed in heavy-light operations" the Leland report concluded, "their greatest value is in their ability to free armored and mechanized forces for offensive action."[32]

Beginning in late 1989 and continuing in 1990 and 1991, members of the NTC Operations Group's Observation Division conducted a series of interviews with personnel ending their present tours at the NTC.[33] The interviewees ranged from NTC commanders to sergeants first class. They included personnel from both the BLUFOR and OPFOR. While the subjects discussed varied widely, many of the respondents talked about heavy/light rotations at the NTC. While, again, there appeared to be basic agreement with Hartzog and Howard's article and with the Leland report, the interviews often revealed the heavy/light rotations from the perspective of soldiers who watched or participated in them over a period of months or even years. Interviews are almost always more candid than formal reports. Further, the interviews were conducted during the Desert Shield and Desert Storm Operations in the Gulf War of 1990-1991, a period when force mixtures were very much on soldiers' minds.[34]

---

31. Ibid.

32. Ibid.

33. Some of the personnel interviewed did not physically leave Fort Irwin but rather received assignment to different positions there.

34. Interviews are completely cited only on first mention. Thereafter only the interviewee's last name is used. Some interviewers were not identified nor were dates provided. Copies of the eighteen interviews are available in the Office of the Command Historian, HQ TRADOC, Fort Monroe, Va. and at the CAC History Office, Fort Leavenworth, Kan.

All the respondents who addressed the issue of training light forces in support of heavy forces in mid- to high-intensity conflict believed such training was necessary as the Army made the transition from a forward deployed to a force projection army. As a captain who had served as an O/C for light and motorized companies and M1 tank teams put it:

> My first impression is that it is probably the most important training that the Army does below strategic level. It is the way we are going to fight. That is the way we are arrayed in Southwest Asia with light divisions [82d Airborne and 101st Air Assault divisions] and heavy divisions. Mech units can't dismount enough infantry to do anything significant dismounted.[35]

A colonel serving as a senior live-fire task force trainer also addressed the issue:

> Those two [forces] together just have to learn to work together; because that's the way to fight, that's the way we did it in World War II, Korea and Vietnam. Suddenly, in the peacetime army, we have grown apart.[36]

He went on to say that

> because of the vicissitudes of how we station light and heavy forces in CONUS [continental United States], light forces are not stationed near heavy and vice versa; so they never get a chance to work together until they come here or go to combat as they did in Panama.[37]

Another thing the interviewees agreed on was that heavy forces did not know how to use light infantry effectively, primarily because they did not train together. A lieutenant colonel serving as chief of the mechanized task force CSS trainer team commented that "I don't think we get the

---

35. Maj. Beacon, NTC Operations Group, Observations Team, interview with Capt. Terence Tidler, [1990].

36. Maj. Beacon, NTC Operations Group, Observations Team, interview with Col Julian Burns, Jr., November 1990.

37. Interview with Col. Burns, November 1990.

mileage out of the infantry we should." He based his opinion primarily on the failure of light units to properly prepare for a coming engagement:

> Every time the OPFOR attacks, two of [their] infantry companies go in the night prior and breach obstacles and unhinge the defense where we're going to attack the next day. And in most cases it's successful and it contributes to the OPFOR victory the next day. In very few deliberate attacks do we [BLUFOR] get the infantry in there and do the same thing to the red guy.[38]

As with the Hartzog and Howard article and the Leland report, the soldiers interviewed at the NTC agreed that the biggest problems heavy and light forces faced when training together was command and control and combat service support. The captain who had served as an O/C for light and motorized companies and M1 teams talked about synchronization:

> Another problem is synchronization between the heavy guys and the light guys. Often when they talk, they don't even use the same words. Doctrinal terms exist for everything in the Army, yet the light infantry and mech guys still use their own expressions. When a mech brigade commander says he wants a unit to do a "thunder run," leaders in a mech task force might know that the dismounts are moving early, linking up with their tracks later, after the vehicles move along a route as a feint of some kind. The light fighters would have no idea what that meant.[39]

The same captain talked at length about combat service support problems:[40]

> There are different techniques and different requirements for every class of supply. . . . Take ice for example. Light

38. Maj. Beacon, NTC Operations Group, Observations Team, interview with Lt. Col. Vona, 30 Mar 90.

39. Interview with Capt. Tidler.

40. In heavy/light rotations, CSS for light forces normally consisted of a slice from the light unit that was attached to the heavy forward support battalion (FSB). The light unit Division Support Command (DISCOM) usually provided a liaison who positioned himself in the support operations of the heavy forward support battalion. Interview with Lt. Col. (P) James G. Scott NTC Observations Team [interviewer not identified], Summer 1990. Scott was at that time senior O/C for the FSB.

> infantrymen in summer need ice. They don't have coolers in their tracks. . . . I have seen units go two or three days without ice. It contributes to heat casualties because soldiers don't like drinking water that has been heated to 120 degrees. This doesn't occur to the heavy brigade S-4, since he is not used to dealing with it.

In addition, light units had different needs for ammunition and construction materials, and very little organic transportation assets. "Unless you give them enough transportation . . . . the light infantry are unable to move any great distance quickly, since they have to be shuttled or walk." The light forces also lacked the ability to "pull" their supplies (pick them up in the trains area), while the heavy brigade S-4 was not used to "pushing" supplies because his units had the assets and flexibility to pick up supplies.[41]

As in the 1987 and 1988 assessments of heavy/light rotations at Fort Irwin, almost all observers commented on the problems with fire support and intelligence gathering. "With so little fire support available [to light infantry], fire support planning does not become a big issue. . . . That carries over to working with the Heavy Forces." A three-year veteran of the NTC and a senior analyst and trainer for the armor task force was more specific:

> We, as maneuver guys, still are wrapped around the idea of killing T-72s and BMPs with anything that's available, and that includes artillery. . . . As we know, conventional artillery is probably more effective when used in suppressing dismounts, or providing a degree of covering fire for our own dismounted operations.[42]

With regard to intelligence, when a veteran O/C was asked if he had ever seen in any heavy/light rotation, a good integration of the light teams in the R&S (reconnaissance and surveillance) plan, replied:

> No, never. They [heavy forces] just treat them like another Task Force given either a sector or zone, depending on if they are defending or attacking. Units very rarely take advantage of the high quality patrolling available from the

41. Interview with Capt. Tidler, [1990].

42. (1) Interview with Capt. Tidler, 1990[?]. (2) Maj. Beacon, NTC Operations Group, Observations Team, interview with Maj. Miller, 11 Apr 90.

> light forces. The Heavy Brigade rarely exploits their night vision capability or ability to stealthfully move in rugged terrain.[43]

On obstacle breaching, the night fight, advantages on close terrain, and especially Army Aviation play, observers were more positive:

> Their [light forces] sappers are exceptionally well trained in light mobility operations. They can approach a booby-trapped triple strand concertina fence in the middle of the night, silently breach it and allow a task force's worth of infantrymen to slide through undetected. I also believe they are better at demolitions.[44]

A five-year veteran of the NTC and S-3 of the OPFOR armor battalion gave his assessment of the effectiveness of light forces at night:

> They make our night uncomfortable. The infantry should own the night. . . . You don't bring 300 infantry soldiers out here to have them march through daytime. . . . the heavy brigade commander who commits his infantry to a series of night dismounted attacks, . . .he's a guy who starts to upset our planning tempo.[45]

In operations in close terrain, the light forces proved to have the capability to take away some of the advantages of armor. Close terrain tended to "channelize" armored forces—that is to limit their ability to maneuver—and afforded the light force the opportunity to concentrate its fires against heavy forces at ranges that eliminated the tactical advantage and protection of armor. As one observer put it, "in hindering terrain, light forces are king."[46]

Army aviation had, perhaps, a greater effect on the performance of light forces deploying with heavy forces than any of their other assets. An OPFOR operations officer described the scene during rotation 90-07 when

---

43. Interview with Capt Tidler, [1990].

44. Interview with Capt. Tidler, [1990].

45. Maj Beacon, NTC Operations Group, Observations Division, interview with Maj. Pattis, 6 Apr 90.

46. (1) "Heavy - Light Lessons Learned," 22 Aug 89, Center for Army Lessons Learned, Fort Leavenworth, Kan. (2) Ltr, Capt. Steve Small to the author, 8 Feb 96 (quotation).

During heavy/light maneuvers, a soldier with the 82d Airborne Division prepares to fire an M-60 machine gun on a tripod mount.

the 24th Infantry Division deployed with elements of the 101st Airborne Division (Air Assault):

> Probably 90-7 with 94 helicopters is maybe an example of a gram or two more weight on the scale than the [motorized rifle] regiment could easily handle. . . . We never had it that dicey before. But when you've got 94 helicopters that had now added an additional dimension to the battlefield, that level of equipment modernization and sophistication gave us a pretty good workout. 90-07 was probably the toughest rotation I've ever seen. The 58-D [OH-58D Kiowa] is a terror. It's kind of like the death machine. He flies over our fighting position and sends back accurate grids. . . . They are very good at seeing us; they are very good at controlling artillery fires; they are very good at executing the brigade deep battle.[47]

Operations involving heavy and light forces working together seemed to be one of the major directions in which the Army was moving as the 21st century approached. A mixture of heavy and light forces often appeared to provide the versatility, deployability, and lethality necessary for winning across the spectrum of global conflict. At the same time, there remained complex problems in the employment of such forces. Many questions remained about command and control, fire support coordination, sustainment, support, intelligence, and mobility differentials. Few argued that heavy/light force mixes were not needed. But some NTC veterans—given increasingly constrained resources—believed priority training time should be accorded to heavy and light forces on terrain for which they were suited. Could quality training for light and heavy forces be accomplished on terrain that dictated the predominance of one type of force over the other? Whatever the case, the heavy/light rotations at the National Training Center were helping to identify the difficulties of operations involving a mixture of disparate forces. And rapidly advancing technology seemed capable of providing some solutions.

---

47. Interview with Maj. Pattis, 6 Apr 90. The OH-58D was a light scout helicopter used for reconnaissance, surveillance, and target acquisition.

Light/Heavy Force Training and Contingency Operations

Late in 1989, TRADOC, FORSCOM, and NTC senior leaders began developing a concept to expand NTC operations to provide training for light/heavy task forces (a heavy battalion attached to a light brigade) and to incorporate contingency operations into the training scenario on a periodic basis. The latter initiative was precipitated by Operation Just Cause in Panama in December 1989.[48] During NTC contingency operations the BLUFOR would feature a mixture of light, heavy, and special operations forces.[49] Such a force would mirror what the Army considered to be the most likely combination of forces to accomplish contingency operations tactical missions in the future. In early January 1990, a special "rump" CTC General Officer Executive Committee (GOEC), meeting at the National Training Center, approved the new initiatives and began development of plans to "transition" the NTC to a contingency mission focus for selected rotations. The group recommended that the light/heavy rotation scheduled for 14-27 April 1990 be utilized to determine the ability of the NTC to support contingency operations.[50]

The first light/heavy contingency cycle at the National Training Center was planned for Rotation 90-08 in April 1990 with elements of the 7th Infantry Division (Light) and the 1st Infantry Division (Mechanized). The XVIII Airborne Corps would act as the Joint Task Force Headquarters with elements of the 75th Ranger Regiment and the 5th Special Forces Group.

---

48. *Caleb Baker interview with TRADOC commander General John W. Foss Defense News*, 5 Mar 90. On 20 December 1989, U.S. military forces intervened in Panama to depose and arrest dictator Manuel Noriega, commander of the Panama Defense Forces. U.S. action was taken to restore the constitutional process, to protect the integrity of the Panama Canal Treaty, to assure the safety of Americans, and to combat drug trafficking, by apprehending Noriega and bringing him to the United States to stand trial. U.S. Army units involved in the invasion included elements of the 5th Infantry Division (M), 7th Infantry Division (L), 7th Special Forces Group, 75th Ranger Regiment, 82d Airborne Division, the 193d Light Infantry Brigade, 508th Airborne Infantry, and the 519th Military Police Battalion.

49. U.S. Army doctrine recognized five types of infantry forces, each with its own special skills and specific organizational design. Light infantry forces were designed for rapid strategic deployability and were especially effective in close or restrictive terrain such as urban areas. Airborne infantry was designed for large-scale force projection operations characterized by combat parachute or air landing assaults. Air assault units had significant antiarmor capability and were especially effective against heavy forces. Ranger units served both as a type of infantry and as special operations forces. Mechanized infantry had the same mobility as armor forces but less firepower and protection. Mechanized forces fought both mounted and dismounted. FM 100-5, *Operations*, June 1993, HQDA.

50. Contingency operations were usually defined as military operations conducted on short notice with forces rapidly deployed into an area of operation. (1) Msg, HQDA to distr, 291257Z Jan 90, subj: Contingency Operations (Con Ops) at the CTCs. (2) Briefing, CTC Directorate to GOEC, February 1990, subj: Contingency Operations.

Army and NTC officials hoped rotation 90-08 could serve as a test bed for further evaluation of and planning for such operations and would reinforce the concept of the Army as a strategic force. At the same time, the principles and objectives previously established for the first heavy/light rotation would be maintained. As a result, TRADOC designated rotation 90-08 as a "focused" rotation for emerging light/heavy doctrine with an emphasis on command and control and combat service support. The command also developed and certified the training scenarios for both light/heavy and contingency operations and assisted the NTC commander in defining appropriate non-Soviet OPFOR. The Command and General Staff College, in support of a CAC action team, was responsible for validation of the scenarios and the development of a booklet on doctrine, tactics, techniques, and procedures for use by the O/Cs in evaluating the performance of the rotating units and in conducting after action reviews. At Fort Irwin, officials built a combat airfield with a tower and some rudimentary buildings.[51]

During rotation 90-08, forces from the United States Army Special Operations Command, while conducting an emergency deployment exercise, were flown aboard U.S. Air Force aircraft from home station at Fort Bragg, North Carolina to the NTC to infiltrate into the light/heavy maneuvers and conduct reconnaissance missions to collect the kind of intelligence that would be required before forced entry into another country. The 75th Ranger battalion conducted a live-fire exercise to seize the aforementioned airfield. The rotational BLUFOR battalion from the 7th Infantry Division (Light) at Fort Ord conducted air deployment to link up with, and relieve, the Rangers. The heavy force from the 1st Infantry Division, Fort Riley, Kansas, joined the BLUFOR light brigade to conduct follow-on operations. The NTC OPFOR reorganized during the first part of the rotation to portray an infantry threat in a contingency operation in the low-to-mid intensity range. At the time of this first contingency operation at the NTC, the CTC Master Plan supported three or four contingency type operations annually beginning in FY 1992.[52]

Several participants in the aforementioned interview program had, in the few weeks prior to their interviews, taken part in Rotation 90-08. In some ways the situation during light/heavy rotations was a mirror image of that during heavy/light training, in that operational control rested with the

---

51. (1) FORSCOM Annual Historical Review, FY 1990, p. VI-8. (2) Msg, HQDA to distr, 291257Z Jan 90, subj: Contingency Operations (Con Ops) at the CTCs.

52. Msgs, HQDA to distr, 291257Z Jan 90, subj: Contingency Operations (Con Ops) at the NTC; 17 Apr 90, subj: Combat Training Center Master Plan (CTCMP) and Contingency Operations (CONOPS) at the National Training Center.

light force rather than the armor and mechanized infantry units. From another perspective, many of the problems were the same. A company team O/C remarked that

> the light Task Force Commander has absolutely no idea how to use those [heavy] guys. He normally establishes support by fire positions 300-400 meters away from the objective, which is inappropriate for weapons with effective ranges in excess of 1500 meters. He normally plans for only four heavy antitank systems, . . . All of a sudden he has all these TOWs.[53]

A senior live-fire task force trainer also commented on the difficulty the differences in mobility caused: "It has to do with cooperation, so the lights can understand the rapid pace at which a heavy force can move and so that the heavies can understand that the OPTEMPO [operating tempo] needs to be somewhat slower for the lights."[54]

A chief of plans and operations for an O/C team, who had just participated in Rotation 90-08, spoke about the problems with planning and security. The NTC had insufficient manpower and a severe shortage of personnel with any special operations experience. The NTC "borrowed" Rangers from Dugway Proving Ground, Utah, and trained them to be observer/controllers for the Special Operations Forces (SOF). The training center brought in personnel from XVIII Airborne Corps headquarters at Fort Bragg, N.C., who had the background to write operations orders for the SOF. Planning was further complicated by the tendency of SOF to classify "the things that we [at NTC] typically would not." Operations using the NTC open communications networks proved very difficult when standard procedures for the special operations forces was to talk to their higher headquarters over secure networks. The O/C summed up his observations. Heavy, light, and especially special operations forces tended to "play in separate sand boxes" and speak different languages. Heavy forces did not understand when light forces talked about "seamless webs and individual squads wandering around in the dark." The fuel consumption of Bradley Fighting Vehicles and tanks "boggled the light guys." Predictably, logistics proved a

53. Interview with Capt Tidler, [1990]. The tube-launched, optically tracked, wire-guided (TOW) missile was the Army's standard heavy anti-tank weapon.

54. Interview with Col. Burns.

major stumbling block and was one of the reasons for conducting the heavy/light/contingency rotation:

> It is not of great difficulty for a heavy brigade to support a light battalion . . . [because] a light battalion's needs are relatively minor. . . . But when this is reversed, as it was in this rotation, it can take most of a light division's logistics assets just to keep one heavy battalion in fuel and ammunition. . . . There are major differences in the way they approach just about anything.[55]

Heavy/light, on balance, was an executable concept; light/heavy presented many more difficulties.

Motorized Rotations

In May 1988, the NTC hosted the center's first motorized-unit rotation with the 3d Brigade of the 9th Infantry Division (Mtz). That initial rotation was not, however, the first occasion on which the paths of the two organizations had crossed. In August 1982, during the development of a concept and a design for a "High Technology Light Division" (HTLD), Army Chief of Staff Edward C. Meyer announced that the test brigade and its slice would go to the NTC in October 1983 for testing of the brigade under combat conditions.[56] (In the period August 1982 through October 1983, the NTC was still undergoing initial development and had conducted only a few rotations). The testing at Fort Irwin of the unique HTLD, which only later would convert to motorized, was precipitated by pressure from the Department of the Army Staff for expansion of the HTLD concept to another active division and a National Guard division. Given the large

---

55. Maj. Beacon, NTC Operations Group, Observation Division, interview with Lt. Col. Michael Ryan, spring 1990.

56. In 1980, General Edward C. Meyer, Chief of Staff of the Army, proposed that the 9th Infantry Division, a nonmechanized infantry division, acquire heavier but rapidly deployable capabilities by use of high technology. He believed the U.S. Army needed a force that was readily deployable, yet capable of fighting Soviet-equipped heavy forces. Airborne and "straight" infantry forces could be rapidly deployed but did not have the mobility or firepower to defeat an enemy force strong in armor and mechanized infantry. The result was a concept for a self-sustaining force capable of defeating armored forces but light enough to be deployed quickly. The high technology concept was destined to fail when the Army abandoned development of one of its principal weapons systems, the Armored Gun System. The turbulent story of what became instead the 9th ID (Motorized) is told in detail in Lt. Col. Stephen L. Bowman, Lt. Col. John M. Kendall, and Lt. Col. James L. Saunders, eds. *Motorized Experience of the 9th Infantry Division* (Fort Lewis, Wash., June 1989). See also Romjue, *Army of Excellence*, pp. 74-77.

amount of training space the high-technology division required for maneuvers, Fort Irwin was a logical site. From August 1982 until mid-1983, the 9th Infantry Division prepared for its fall rotation, amid reorganization and other problems. For example, no MILES system existed to replicate the MK-19 40-mm. automatic grenade launcher, one of the critical weapons systems in the test brigade. At that point, the National Training Center's senior officials took a position they had taken in the past and would continue to take on a number of occasions in the future. The NTC announced it did not want the evaluation conducted at Fort Irwin, on grounds that the training center's charter specified training, not testing. The testers would have to find another site.[57]

Years later, the NTC included the first motorized forces in its rotations. In late March and early April 1989, the 1st Brigade, 9th Infantry Division conducted a rotation as a motorized-heavy combat team. A year later, in early February 1990, elements of the 9th Infantry Division once again trained at the NTC, this time as units in transition. The Department of the Army had decided to inactivate the 9th Infantry Division beginning in FY 1990, the action to be completed by FY 1992. The 9th would be replaced by a Separate Motorized Brigade in FY 1991. The experience of the 9th Infantry Division in rotation 90-05 was reflective of the equipment problems the HTLD had encountered for ten years and which finally caused its demise.[58]

The observer/controllers assigned to the motorized force—but much more familiar with heavy armor and mechanized infantry organization and equipment—found the 9th's task organization "strange." One O/C remarked that "within the same task force they had some TOW platoons that were authorized three TOWs, some were authorized four TOWs, and others authorized five." The problem of incompatibility of the MK-19 with MILES that had existed in 1983 still had not been completely solved. "It [MK-19] had none of the effects you would have expected from a weapon firing HE [high explosive] ammunition in the desert." In addition, the soldiers of the 9th Infantry Division had received the modernized version of the MK-19 only three months earlier and the weapons could be repaired only by civilian contractors.[59] The O/Cs were impressed by the motorized unit's excellent

---

57. Bowman, et. al., eds., pp. 12-13, 20-21. The test was ultimately conducted at Fort Bliss.

58. (1) Bowman, et.al., p. 292. (2) FORSCOM Annual Historical Review, FY 1990, p. V-26.

59. The "Mark-19" was known in the U.S. Army as the "Grenade Machine Gun." Other sources identified it as the "Automatic Grenade Launcher." The MK-19 was originally developed on behalf of the U.S. Navy, but adopted by the Army in the late 1980s. The gun was first fielded with the 9th Infantry Division *(Continued)*

mobility and the quality of its leaders. Its very mobility, however, caused its security to be "the poorest of any unit I have observed." An observer described an engagement in which a dismounted OPFOR infantry company surprised the motorized task force and damaged or destroyed 25 of its 40 TOW missiles. The O/Cs believed the motorized unit relied too much on the TOW, while its standard operating procedures seemed to call for a more rapid fire gun system. In an implicit reference to the motorized forces' protocol of mounting the TOW anti-tank missiles on HMMWVs, one O/C remarked that the 9th Infantry Division units lacked heavy support. "They need tanks."[60]

The Focus on Unit Learning

The reader should not conclude from the focus in this chapter on problems encountered by units training at the National Training Center, that few things went right during heavy/light, light/heavy, contingency operations, or motorized rotations. Indeed, on many occasions strengths in the concepts were revealed. In any case, the basic NTC concept—which had not changed since the center's inception—focused not on winning or losing, but on identifying and fixing deficiencies. That is, on unit learning.

---

59. *(Continued)* in 1983. In 1988, the Army took over the program and awarded a contract to the SACO Defence Company, Inc. for production. The weapon provided close-range firepower against personnel and light armor. The MK-19 weighed nearly 74 pounds and had a range of 1,640 yards at point targets and 2,405 yards against area targets. It could be mounted on a tripod or on M113 armored personnel carriers, HMMWVs (high mobility multi-purpose wheeled vehicles), trucks, and M88A1 recovery vehicles. Tim Ripley, *The New Illustrated Guide to the Modern US Army* (London: Salamander Books Ltd., 1992), p. 128.

60. The TOW (tube-launched, optically tracked, wire-guided) anti-tank missile was a relatively slow weapons system because it required the gunner to track the missile until it hit the target. The TOW could be mounted on a variety of platforms including the M2/3 Bradley Fighting Vehicles, the AH-1 Cobra helicopter and Improved TOW Vehicles. The TOW could also be mounted on a tripod. Interviews with Capt. Tidler [1990] and Col. Burns, November 1990. On the TOW missile system see Army Materiel Public Affairs Office, "Army Weaponry and Equipment," *Army*, October 1990, p. 321.

CHAPTER III

The Fort Irwin Expansion Effort

Introduction

Since the early 1980s, NTC planners had from time to time considered proposals for the center to evolve into a facility that could support the actual maneuver of brigade level forces. The story of efforts to accomplish that goal has been recounted in Chapter II. A major obstacle to brigade-level training requiring accommodation of more than 5,000 soldiers, was the lack of sufficient maneuver area to support such a large number of troops. Despite its 643,000 acres, by the mid 1980s it had become clear to NTC planners that current maneuver space at Fort Irwin was becoming inadequate. A primary reason was the changes in tactics, doctrine, and equipment during the 1980s and early 1990s from those of the 1970s. Modern U.S. warfighting doctrine—AirLand Battle—was influenced by the continued modernization and technological advances of U.S. forces and potential adversaries. The more linear and shallow tactical fronts of World War II, Korea, and NATO and the lateral maneuver of the Active Defense doctrine of the 1970s, had given way to the fluid 100-mile rear, close, and deep battle areas of the Persian Gulf War.

The Army realized after several years of training at the NTC, that future battlefields would be controlled by commanders who would have at their disposal a wide variety of highly mobile ground and aerial weapons that would demand training at doctrinally correct and realistic engagement distances. For example, the M1A1 Abrams main battle tank could accurately hit targets more than one and a half miles away while moving at 45 miles per hour. The Apache helicopter could accurately engage targets more than 5 miles away. The Multiple Launch Rocket System (MLRS) could hit targets almost 20 miles distant. Even more important were the

maneuver dimensions of modern Army doctrine that required commanders to use the entire depth of the battlefield to strike the enemy.[1]

Much of the acreage at Fort Irwin could not be used for force-on-force maneuvers or live-fire exercises. Fort Irwin's boundaries had first been established in 1940, when President Franklin Delano Roosevelt withdrew public land to establish an antiaircraft training base. After periodic reactivation of the post, the NTC was established in 1981 within the original Fort Irwin boundaries. Fort Irwin was also a multipurpose facility. The National Aeronautics and Space Administration operated the Goldstone deep space and satellite tracking facility on 46,436 acres of Fort Irwin land. The Air Force conducted live-fire bombing operations on another 92,626 acres. Furthermore, steeply-sloping mountain ranges made much of the land unsuitable for maneuvers (land with more than a 20 percent slope was not considered maneuverable for military vehicles). Environmentally protected areas and archaeological sites precluded training on an additional 100,000 acres. In sum, only about 55 percent of Fort Irwin's land was available for training.[2]

Soon after the future of the NTC seemed secure, the Department of Defense had conducted a mandatory Land Use and Requirements Study focused on the NTC. Completed in 1985, the study laid out the reasons (noted above) why the NTC could not accommodate realistic brigade-level maneuvers. The study further concluded that the NTC and Fort Irwin needed an additional 238,000 net maneuverable acres in operational lands. Within a few months, the training center had established the U.S. Army's National Training Center Land Acquisition Project. That project originally involved the expansion of Fort Irwin by approximately 328,660 acres to the south and east of the installation. Some of the acreage to the south lay between the Army installation and the Marine Corps' Twenty-nine Palms Training Center, approximately twenty-two miles to the south. The two training centers had from time to time discussed building a tank road to connect the maneuver areas. The federal Bureau of Land Management (BLM) of the Department of the Interior managed most of the land in question.[3] At this

---

1. Chambers Group, Inc, for the National Training Center, Fort Irwin California and the U.S. Army Corps of Engineers, Los Angeles District, Revised Final Desert Tortoise Biological Assessment and Conservation Plan for the National Training Center's Land Acquisition Project, Fort Irwin, California, October 1992, p. 2-2 [hereafter cited as Biological Assessment, 1992].

2. (1) Executive Order #8507. (2) Biological Assessment, 1992 P. 2-3.

3. Approximately 75 percent of the proposed expansion area was managed by the BLM. The remainder belonged to the State of California or to private owners, and would have to be purchased.

writing, land acquisition for Fort Irwin was still pending. The project ran afoul of an entangled set of difficulties at every turn.[4]

Critical among those difficulties were environmental constraints. To illustrate, the habitat of the desert tortoise, an "endangered" or "threatened" species, and California's state reptile,[5] extended into the existing boundaries of Fort Irwin, as well as into the proposed expansion area. Federal agencies and California environmentalists insisted the tortoise be protected. In attempting to satisfy that requirement, the NTC had to consider numerous pieces of legislation—existing and proposed.

Concurrently with the tortoise controversy, a California Desert Protection Act that would transfer millions of acres in California to National Parks or other restricted status, was being hotly debated in the Senate and House of Representatives' committees concerned with natural resources and public lands. Passage of the act would leave much less land for military use. During that debate, members of Congress, and especially members of the California delegation, sparred hotly over the general topic of military use of public lands and the more specific topic of military overflights over national parks and other protected areas. Representatives of the Department of the Army and the Department of Defense testified on numerous occasions over a period of eight years, in an attempt to explain the Army's position to senators, congressmen, and representatives of a variety of environmental groups.

There were also issues to be settled with other residents of California. Intertwined with all those roadblocks was the increasing public criticism of the armed forces' environmental policies. As a result, Army Chief of Staff General Gordon R. Sullivan determined the Army would take the lead in "stewardship of the environment."[6] Such a position mandated that the service carefully scrutinize its own policies. The net result of all the issues that came to bear on the land acquisition project was that the Army's number one priority land project was debated in every Congress beginning in 1986, and as of the end of 1993, the land acquisition project had yet to bear fruit.[7]

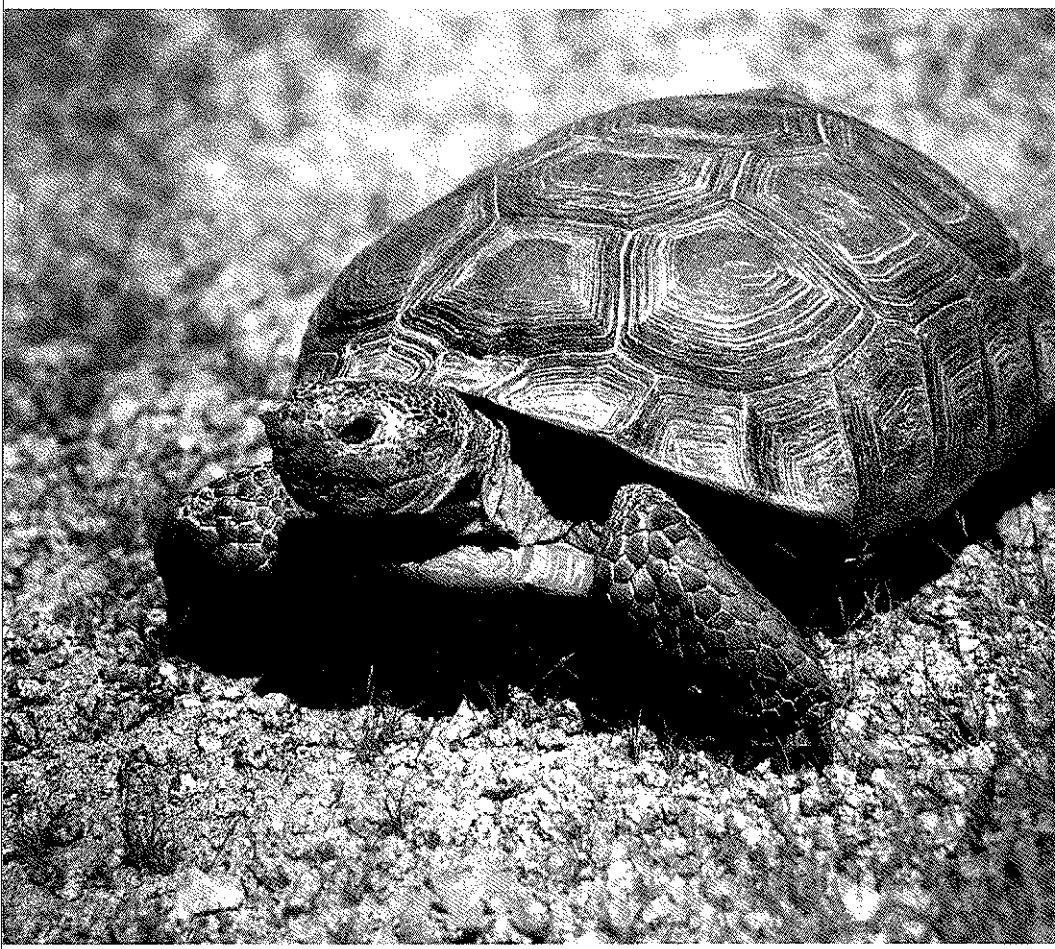
---

4. Msg, HQDA to distr,182020Z Dec 85, subj: National Training Center (NTC), Joint Readiness Training Center (JRTC), Combat Maneuver Training Center (CMTC) Functional Area Assessment.

5. The protection status of the desert tortoise changed over the period under review.

6. Sullivan was Chief of Staff of the Army from June 1991 to June 1995.

7. Biological Assessment, 1992, pp. 2-3 to 2-4.



The desert tortoise is one of the official symbols of the State of California. Some 40 percent of the tortoise population lives in the western Mojave Desert. Adult tortoises weigh up to 20 pounds and live up to 80 years.

As important as additional training land was to the NTC, the issue was also indicative of a larger concern: the conflict, real or perceived, between two activities generally admired and supported by Americans: the maintenance of a qualified military structure, and the protection and enhancement of the nation's natural environment. The interface between national defense and resource conservation had not traditionally been a matter of public debate. Although there had been some controversy in the past, administrative and legislative action had ensured the availability of a trained defense force. Defense and natural resource advocates had seldom crossed paths. During the time that the NTC waged its campaign for more maneuver

space, however, a radically changed world threat situation, a growing public concern for protection of the environment, and the establishment of highly motivated, effective environmental advocacy groups operating within and without the federal government, appeared to be intersecting in a debate over the future of land in the public domain and land leased or withdrawn for military use. Further, the downsizing of the military and the closing and consolidation of bases tended to cause public confusion when new lands were sought. Both proponents and opponents of military use of public lands remarked often during the debates that the public generally saw no need for withdrawal of public lands for military use. Economic, demographic, international, and ideological trends seemed likely to increasingly affect how Congress addressed issues that affected federal lands and related resources.

The National Training Center land acquisition story also revealed the large number of interests that came to the table when a controversial piece of legislation was pending. A common thread that ran through the debate was the need to accommodate that multiplicity of interests. In addition to the military and the environmentalists, there were mining interests, ranchers who leased federal land for grazing, homeowners, private land owners, Los Angeles utility companies, Chambers of Commerce, television cable companies, recreationists such as hunters and off-the-road vehicle fans, rock hunters, the other military services, native Americans, and even a monastery.[8]

The Desert Tortoise Problem

The story of the desert tortoise and the NTC began before such a training center was proposed and long before the first units began training there. The first national wildlife refuge had been established at Pelican Island, Fla., by executive order of President Theodore Roosevelt in 1903. The number of such refuges had continued to grow. Beginning in the late 1950s, some groups became extraordinarily concerned about the possible disappearance of some species of animals and plants, and began campaigns to formally and legally protect "endangered" species. In 1966, Congress enacted legislation to establish the National Wildlife Refuge System under

8. For a detailed discussion of the issues of the protection of natural resources and military use of public ands, see George H. Siehl, *Natural Resource Issues in National Defense Programs*, 31 Oct 91 (Washington, D.C.: Congressional Research Service, Library of Congress). See also Adela Backiel, *The Major Federal Land Management Agencies: Management of Our Nation's Lands and Resources*, 8 Feb 93 (Washington, D.C.: Congressional Research Service, Library of Congress). A Coptic monastery was located just south of Fort Irwin. The Coptic monks were members of the Egyptian Christian Church.

the management of the federal Fish and Wildlife Service (FWS) of the Department of the Interior. Seven years later, further environmental efforts culminated in the passage, in December 1973, of the Endangered Species Act.[9] That Law defined the process for placing a species on the endangered list and established accountability factors. Enforcement of that law, too, was the responsibility of the Fish and Wildlife Service.[10]

Although there had long been concern for the future of the desert tortoise, the animals were not on the "endangered" or "threatened" list when Fort Irwin and the NTC first began efforts to acquire more land. Chief of Staff of the Army, General John A. Wickham, Jr., approved an outline for the proposed expansion in early 1987. The Army filed a proposal for withdrawal of public land adjacent to Fort Irwin for military use in 1988. In mid-August 1989, the Department of Defense filed the required formal application with the Bureau of Land Management (BLM) of the Department of the Interior, the managing agent, and began preparation of an Environmental Impact Statement (EIS).[11] Environmentalists immediately began an intensive lobbying of the FWS, activities that quickly culminated in the Fish and Wildlife Service taking emergency action to place the Mojave population of the desert tortoise on the endangered list. (In April 1990, the tortoise was redesignated "threatened," a category that afforded almost the same protection and gave the animal permanent protected status). The designation of the desert tortoise as endangered caused the Department of Defense to suspend work on the EIS until further studies of the tortoise population could be conducted.

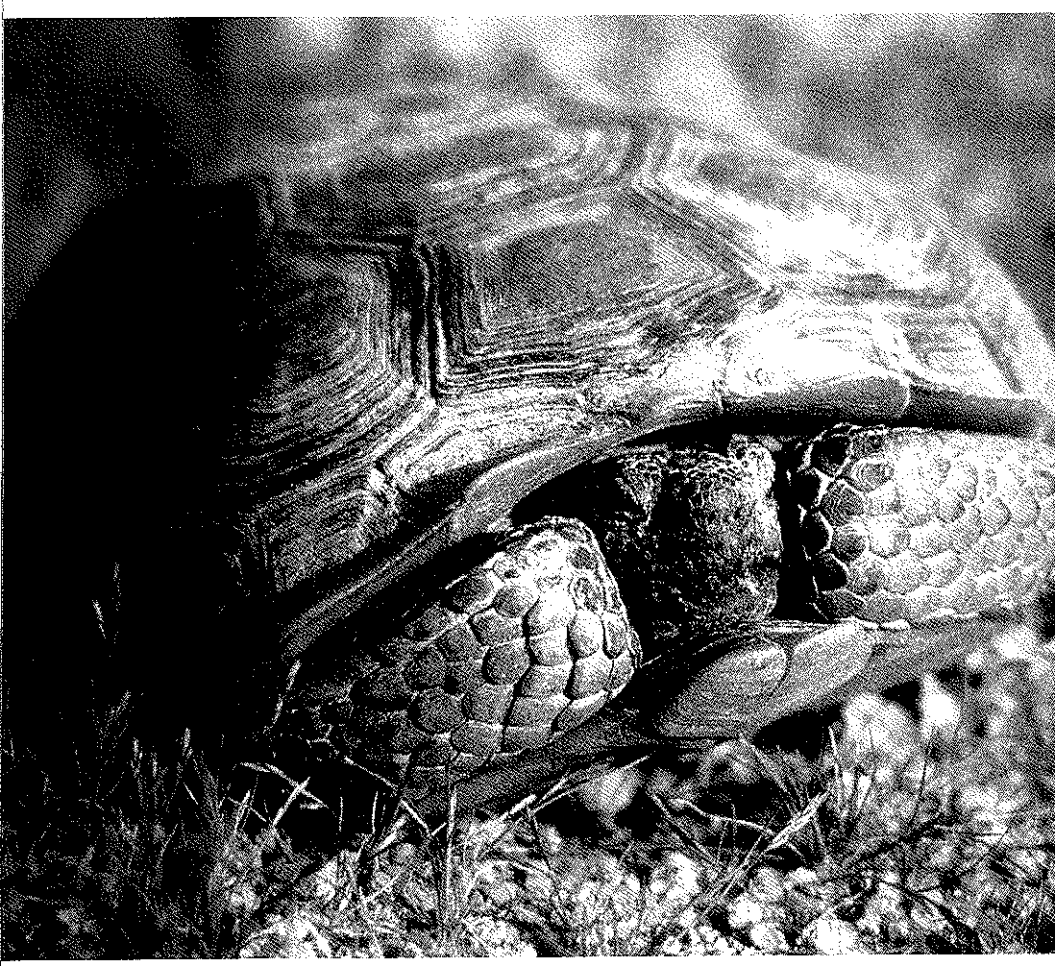
The desert tortoise was a large herbivorous reptile found not only in California, but in portions of the Arizona, Nevada, and Utah deserts and in Mexico. Generally, the animals were active during the spring and early summer when annual plants were available for food. Some tortoises were also active in warm fall months and after summer rains. The rest of the year they spent in burrows to escape the extreme heat of the desert. The desert tortoise was the only species of native tortoise within its range. The adult tortoise usually weighed 10-20 pounds and had a shell length of up to 15 inches. Many lived to be sixty to eighty years old or more. The desert tortoise was the victim of a variety of predators, including coyotes, foxes,

---

9. P.L. 93-205, 87 Stat. 884, 16 USC 1531, et. seq.

10. Backiel, p. 25.

11. All public land management functions fell under the Department of the Interior with the exception of the National Forest System which was the responsibility of the Department of Agriculture.



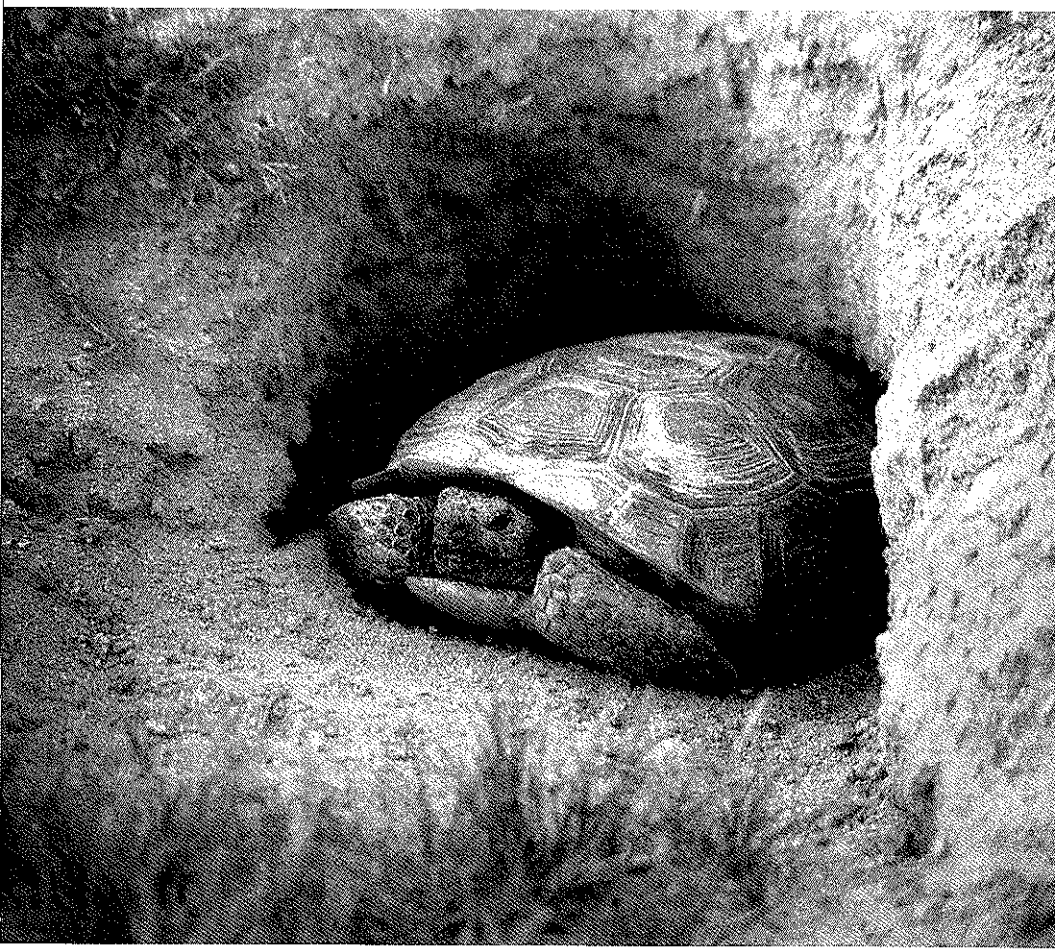
The Army's land acquisition project, designed to expand the maneuver area at Fort Irwin, ran afoul of a myriad of federal regulations and environmental issues. Chief among environmental concerns was the future of the desert tortoise.

and raptors, especially the raven. The young tortoises were particularly vulnerable, because their shells did not harden rapidly.

The FWS determined that the tortoise warranted listing as a threatened species in response to increasing concerns with regard to habitat disturbance and increased mortality over portions of its range. Habitat disturbance came, it was thought, from military vehicles and off-the-road recreationists, as well as livestock grazing on tortoise food resources. The event that immediately precipitated the FWS's placement of the desert tortoise on the threatened list was the discovery that a number of them had died

from a disease known as Upper Respiratory Tract Disease. However, as of October 1992, only one case of the disease had been confirmed at the NTC or in the area of proposed expansion.[12]

Under the Federal Land Policy and Management Act (FLPMA) of 1976—discussed in greater detail below—the land the NTC originally proposed to acquire had become a part of the California Desert Conservation Area. Four years later, under the California Desert Protection Plan, which



Desert tortoises were usually active in the spring, early summer, and in warm fall weather. The rest of the year they spent in burrows to escape the extreme heat of the high desert.

12. Biological Assessment, 1992, pp. 3-14 to 3-15.

is also discussed in greater detail below, the area had been designated a "wilderness study area," a designation that left the decision to declare the area in question a "wilderness," on hold pending further study.[13] As a result of the FLPMA and the new protective designation for the tortoise, a number of studies were conducted (1983, 1988, 1989, 1990, 1991, 1992) to determine the distribution and density of the desert tortoise at the NTC and in the adjacent study areas. The combined figures showed the greatest density in the southernmost part of Fort Irwin and in the area immediately south and west of the installation—the very acreage Fort Irwin and the NTC hoped to acquire. (Map 2) All totaled, researchers estimated the NTC was home to 5,200 to 7,800 of the elusive tortoises. Biologists also conducted studies of the tortoise habitat to "examine all of the past, present, and future disturbances that have affected or will likely affect the tortoise and its habitat within the Western Mojave Desert." It was generally determined that while tactical vehicles had been major contributors to the destruction of shrub growth—and therefore of tortoise food—human population growth, off-the-road vehicle activity, and construction of utility conduits, had also contributed to loss or degradation of habitat.[14]

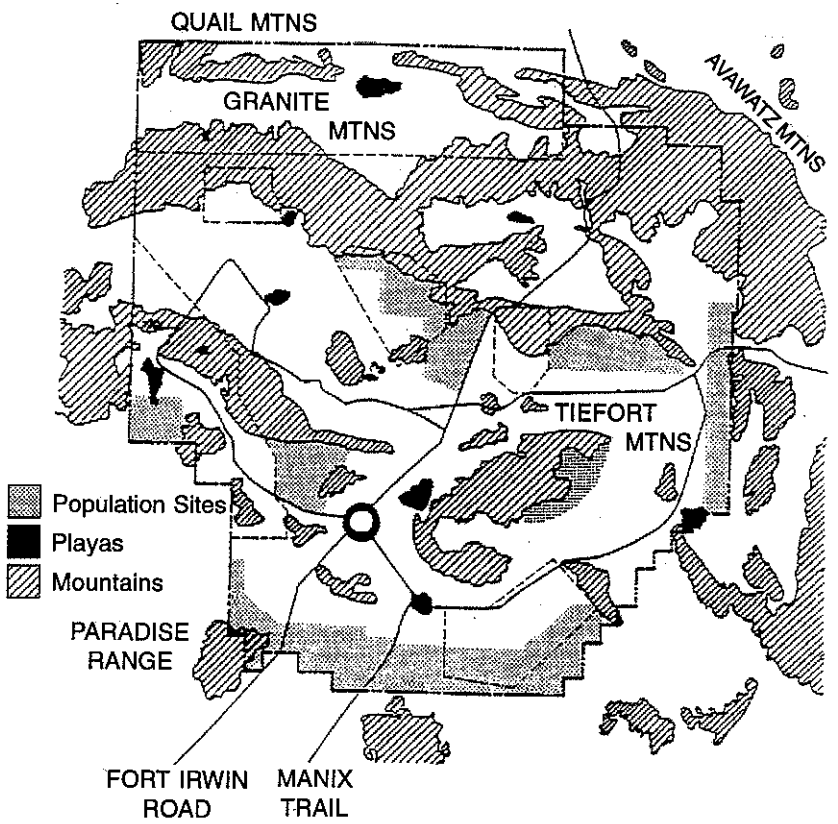
Meanwhile, having learned of the addition of the desert tortoise to the endangered species list on 4 August 1989, the Engineers at Fort Irwin attempted to ascertain what responsibilities the installation—and by implication, the NTC—had with regard to the desert tortoise. Two weeks later, on 23 August 1989, representatives of the Directorate of Engineering and Housing met informally with Fish and Wildlife Service representatives from the Southern California Field Station. Presumably, things did not go well, because a week after that, on 31 August, the Director of Engineering and Housing wrote to the acting field supervisor of FWS at Laguna Niguel, Calif., to request information on "listed and proposed endangered and threatened species which may be present within the boundaries of the National Training Center and Fort Irwin." On 6 October the list arrived at Fort Irwin along with a letter from the FWS supervisor. He advised the chief engineer of the NTC's obligation under the Endangered Species Act:

> If a Department of the Army (Army) project may affect a listed species, the Army has the responsibility to prepare a Biological Assessment if the project is a construction project

13. Federal Land Policy and Management Act, P.L.

14. (1) National Training Center, Desert Tortoise Biological Assessment for the Current Mission at the National Training Center, Fort Irwin, California, June 1991 [hereafter cited as Biological Assessment, 1991]. (2) Biological Assessment, 1992, pp. 3-15 to 3-21.

Map 2
Desert Tortoise Population Sites on Fort Irwin



Source: A. J. Krzysik, Ecological Assessment of Military Training Effects on Threatened, Endangered and Sensitive Animals and Plants at Fort Irwin, California. U.S. Army Corps of Engineers, Construction Engineering Research Laboratory, Champaign, Illinois.

> which may require an Environmental Impact Statement. If a Biological Assessment is not required, the Army still has the responsibility to review its proposed activities and determine whether the listed species will be affected.[15]

The FWS supervisor went on to warn that while Fort Irwin could continue planning for expansion, no resources could be committed until the FWS had completed its assessment of the situation. Further, if a listed species would be affected, under the law the Army had to request "formal consultation" with the FWS.

In September 1989, Secretary of Defense Richard Cheney visited the NTC to investigate the controversy about the desert tortoise and the growing opposition among miners, ranchers, and other homeowners to Fort Irwin's expansion. Cheney voiced his support for the acquisition of more land: "I don't see why we cannot on the one hand protect our species and also maintain our military capability." The Secretary suggested that perhaps the tortoises could be confined in fenced areas. During Cheney's news conference, a Sierra Club leader called the idea "absurd," remarking that "tanks and tortoises don't mix." By that time, the battle lines appeared to be firmly drawn.[16]

Faced with the uncertainty of whether a Biological Assessment was required, in January 1990, the NTC contracted with the U.S. Army Construction Engineering Research Laboratory, or CERL, to prepare the assessment. According to the procedures set down in the Endangered Species Act, once the FWS received the report, it would issue a "Biological Opinion." Meanwhile, the draft Environmental Impact Statement (EIS) scheduled for release in late 1989 had to be put on hold until more studies of the desert tortoise and its habitat could be performed. At that point, an unusual occurrence pointed up the nature of the controversy over the desert tortoise. It was customary for the military services to hire a contractor to do the EIS while the BLM served as a cooperating agency. In the case of Fort Irwin, the BLM would prepare the EIS "because we felt the issues which involve wilderness study areas, desert tortoise habitat, and recreation were so significant that we needed to lead the process."[17] In late March

---

15. (1) Briefing Slide, National Training Center Section 7 Historical Milestones, June 1991. (2) Ltr, Brooks Harper to Lt. Col. John E. Wright, 6 Oct 89.

16. Jenifer Warren, "Battle Lines Drawn on Ft. Irwin Growth," *Los Angeles Times*, 22 Sep 89.

17. Cy Jamison, Director, Bureau of Land Management to David Alberswerth, Director, Public Lands and Energy Division, National Wildlife Federation, 24 Nov 89.

1990, presumably because of the ongoing studies, the NTC requested additional time to complete the CERL report. Finally, in the spring of 1991, the NTC submitted the report. Meanwhile, in a separate action, Fort Irwin initiated formal consultation proceedings with the FWS.[18]

The CERL Biological Assessment of 1991 presented a brief history of the installation, described its current mission, and outlined the major features of the Fort Irwin environment. In addition, it reported the results of the many surveys and studies of the desert tortoise. The report's authors pointed out that unit movements were strictly controlled to protect the tortoise and for safety reasons. They also stressed the role that the instrumentation system and the observer/controllers played in protecting the environment during maneuvers. Each rotating unit was briefed separately by a biologist and archaeologist on restricted areas, off-limits areas, and protected sites such as the springs within the boundaries of Fort Irwin. Handouts warned against handling the tortoises and warned soldiers not to litter because ravens were "especially attracted to MRE's." The Biological Assessment also pointed out the California State University (Dominquez Hills) "Neonatal Tortoise Research Project" which Fort Irwin and Southern California Edison sponsored. Fort Irwin had provided a one-square-mile area where a predator-proof enclosure was built to study nesting and young tortoises. The veterinary clinic at Fort Irwin even had a tortoise adoption program.[19]

The carefully prepared CERL report apparently did not impress the Fish and Wildlife Service officials. In a letter to NTC commander, Brig. Gen. Wesley K. Clark, the FWS field supervisor concluded that "the National Training Center is not meeting the mandates of the Endangered Species Act." However, he stated in the required "Biological Opinion" that "the proposed action is not likely to jeopardize the continued existence of the desert tortoise. Critical habitat has not been designated in California for this species. Therefore, the proposed action will not result in adverse modification of critical habitat." Later he explained that that conclusion had been reached because "the greatest amount of habitat to be lost on the National Training Center has already occurred." The author went on to

---

18. (1) Ltr, Harper to Wright, 6 Oct 89. (2) Briefing Slide, NTC Sect 7 Milestones, June 1991. (3) U.S. Congress, *Oversight Hearing Before the Subcommittee on National Parks and Public Lands of the Committee on Interior and Insular Affairs, House of Representatives, January 3, 1990*, (Washington D.C., 1991), 101st Cong., 2d sess, p. 37 [hereafter cited as Oversight Hearing, Public Lands, 3 Jan 90].

19. Biological Assessment, 1991. Only those tortoises already in captivity or sick or injured animals that had been cared for by the clinic were available for adoption. It was illegal to remove a tortoise from its natural habitat. Once captured, however, they were not to be released back into the wild. MRE stood for "meals, ready to eat," issued to military personnel.

criticize the NTC for the loss of tortoise habitat, a circumstance he attributed to training exercises over a ten-year period and the opening up of four artillery impact areas during 1985 and 1986.[20] Further, a 1989 survey of the tortoise population had found that of forty-four carcasses found, twenty-three had been within tracks made by tanks, lending credence to the Sierra Club's "tanks and tortoises don't mix" comment.[21]

The Fort Irwin landfill was also criticized for attracting "numerous common ravens" which then fed on young tortoises. The Department of the Army was ordered to clean up the landfill at Fort Irwin and restrict the ravens' access to waste disposal areas. The Biological Opinion expressly stated that the ravens were not to be killed—presumably a response to a suggestion by the BLM that shooting and poisoning them was one method of control. (The Humane Society quickly acquired a restraining order to put an end to that idea).[22] The FWS mandated among other things, that in areas with the largest tortoise population, the NTC establish a management plan for the desert tortoise, install barbed wire and a tortoise-proof fence at the edge of suitable habitat, and prohibit the use of vehicular traffic within those areas. Further, all convoys using the Manix Tank Trail from the Yermo Depot to Fort Irwin and the Goldstone Road were to have a lead vehicle with at least one observer to watch for desert tortoises and remove them from harm's way. The Fort Irwin biologist was to train the observers in the biology and handling of tortoises.[23]

Faced with such restrictions and mounting opposition among California environmentalists and in Congress to the further withdrawal of public lands for military use, the Army reassessed the land acquisition effort. As noted earlier, much of the objection to the expansion of Fort Irwin was based on the presence of a large number of desert tortoises in a portion of the area of proposed expansion—that being the area to the south of the current Fort Irwin. Thus, apparently as a result of the objections of the BLM and the FWS, the area of proposed expansion was changed to include approximately 260,000 to 330,000 acres east of Fort Irwin that had a very low density of tortoise population. The acreage would vary according to

---

20. The impact areas had been placed in off-limits status when the NTC opened, pending a future cleanup so that they could be used for maneuvers. The four areas were Langford Lake, Lucky Fuse, Nelson, and Gary Owen.

21. Ltr, Jeffrey D. Opdycke to Brig Gen Wesley K. Clark, 24 Sep 91, subj: Biological Opinion for the U.S. Army's Current Mission at the National Training Center, Fort Irwin, California.

22. "All Creatures Great and Dwindling," *Vanishing California*, December 1989, pp. 84-85.

23. Ibid.

which of four alternative plans was chosen. The new proposal included the Silurian Valley, the Vatjean Valley, the Soda Mountains, and the Atawatz Mountains. It also included a 150,000 acre portion of the U.S. Navy's Mojave B Range to the west of Fort Irwin. Mojave B was a part of the China Lake Naval Weapons Center, and the Army envisioned its use by both services. (Map 3) Perhaps in an effort to ensure the Fish and Wildlife Service's acceptance of the alternative sites, the NTC also asked for 2,560 acres in the area of heavy tortoise populations south of the post, to be managed for protection of the tortoise and to prevent human injury by restricting access to abandoned mine shafts. No maneuvers would occur there and the area would be off-limits to civilian off-the-road use.

In all, the land the Army chose, including the China Lake tract, totaled about 480,000 acres, of which approximately 240,000 was maneuverable. Only about 33,000 acres were considered tortoise habitat. A major drawback to maneuvers in the Silurian Valley area was the presence of California State Highway 127, which ran in a northerly direction from Baker, Calif. on interstate Route 15 to a point just east of Death Valley National Monument before crossing into Nevada.[24] The highway ran to within about eight miles of Fort Irwin and was the largest roadway between Interstate Route 15 and Death Valley, and one of the few paved roads in the area.[25]

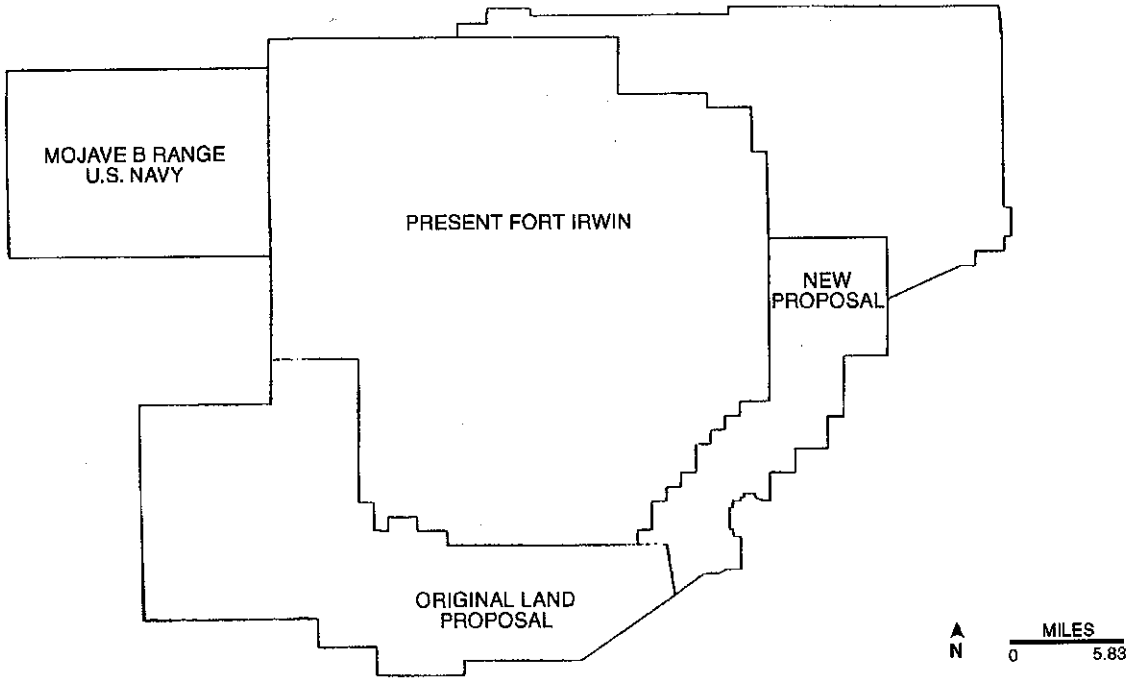
Land ownership in the Silurian Valley area was mostly public, and the public lands were managed directly by the Bureau of Land Management. The California Desert Conservation Area Plan of 1980 directed "multiple-use" management of public lands in that area of the western Mojave Desert. All or portions of seven wilderness study areas lay within the approximately 306,000 acre tract. Under the multiple-use designation, current land uses included a variety of activities. Mining took place along a portion of the southern boundary. Boulder Corridor, a major utility transmission corridor ran along interstate highway 15 through the southern and eastern portions of the proposed expansion area. The electric lines, which ran from Hoover Dam near Las Vegas to Los Angeles, provided approximately 70 percent of that city's electricity. A natural gas pipeline paralleled

---

24. Although the Army's position on acquisition of the newly proposed area was that traffic was very sparse on Route 127, in reality traffic was moderate to heavy at certain times of the year. Because of the highway's route from a major interstate highway to a point close to Death Valley, Baker, Calif. on Interstate Route 15, billed itself the "Eastern Gateway to Death Valley."

25. (1) Biological Asssessment, 1992, i, ii, 3-20 to 3-21, 3-24. (2) Part of the present California State Highway 127 was a part of the old Salt Lake Trail. Over that trail merchants from Los Angeles transported goods to the Mormons in Utah, who had to buy most of their manufactured goods outside the territory. Route 127 was also the trail over which Army dragoons had escorted paymasters, mail carriers, etc. Dennis G. Casebur, *Carleton's Pah-ute Campaign*, published by that author, 1972, pp. 14, 15.

Map 3
Proposed Land Acquisition Areas



Source: Adapted from Revised Final Desert Tortoise Assessment and Conservation Plan for the National Training Center's Land Acquisition Project, Fort Irwin California, for the National Training Center and the U.S. Army Corps of Engineers, Los Angeles District by the Chambers Group, Inc., October 1992, p. 16-3.

the Boulder Corridor. A variety of recreational activities took place in the Silurian area: "rockhounding"; sightseeing, and limited off-highway vehicle use. A small portion of the land was used for grazing. Private lands encompassing only 8,038 acres (1.7 percent) were scattered widely throughout the area and principally coincided with mining claims. Land owned by the State of California accounted for 15,374 acres, or 3.2 percent.[26]

With the geographic change in the land acquisition plan, another Biological Assessment had to be prepared and submitted to the FWS. Plans were for the new assessment to become a part of the aforementioned Environmental Impact Statement required by the Bureau of Land Management. Also prepared by the Chambers Group, Inc for the NTC and the Corps of Engineers, the revised report of October 1992 included much of the same information provided in the 1991 report. In addition, it included provisions for the preparation and management of a Tortoise Conservation Plan and plans for the relocation of tortoises from the proposed expansion areas east and west of Fort Irwin prior to the land's use for maneuvers. The relocation plan was estimated to cost upwards of $2.5 million. Expanded educational programs were promised, to include all Fort Irwin personnel. Fences were planned for the protection of biological, cultural, archaeological, historical, and paleontological areas.

The October 1992 report's authors took pains to point out that the Fort Irwin land acquisition effort had received support from two unlikely sources—the Base Realignment and Closure Commission (BRAC) of 1988 and the General Accounting Office (GAO). The BRAC Commission report noted that:

> . . . the increasing emphasis on joint and combined- arms operations expands the requirement for large training areas, such as the National Training Center at Fort Irwin, California. In the past the services have been able to augment their training areas by using other federal lands, such as national forests. . . . That option is becoming increasingly constrained because of the growing body of legislation that places greater limits on the use of federal land. . . . The foregoing demonstrates clearly the need for the Department of Defense to pursue vigorously the acquisition of large tracts of land in sparsely populated regions for the purpose of ground and air training.

---

26. Biological Assessment, 1992, pp. 3-4 to 3-5.

> . . . the services should be seeking ways in which they might expand training areas, such as the National Training center at Fort Irwin, California to accommodate the need for battalion, brigade, and division-level maneuver with artillery, missile, and air support.[27]

In addition, the GAO had independently validated the Army's requirement for the expansion of Fort Irwin.[28]

In April 1993, the Army and Fort Irwin released a recovery plan for the desert tortoise, as the Endangered Species Act required. There matters stood with the desert tortoise as the Fort Irwin-NTC land acquisition project was facing another related challenge—the California Desert Protection Act bill in Congress.

The Military Use of Public Lands Debate in Congress

In 1986, Senator Alan Cranston, Democrat from California, introduced the first version of the California Desert Protection Act (CDPA) in the 99th Congress. The proposed desert protection legislation was debated in every session of every Congress from then through 1993. The bill was sponsored and supported by a variety of environmental groups in California and nationally. If enacted, the legislation portended a negative impact on the military services' efforts to acquire more public land for training, especially in the west and, more especially, in California. Concurrently, hearings were being held on the military use of public lands generally. The two issues, environmental protection and military use of public lands, became so intertwined that by 1993, hearings on the two bills were held together. Along the way, the framework of the debates and hearings was informed by a number of existing laws.

The ownership and disposition of the federal lands had long been an issue in American history. The original colonies' cession of land between the Appalachian Mountains and the Mississippi River to the Federal

---

27. Public Law 100-526, Base Realignments and Closures, Report of the Defense Secretary's Commission, December 1988, pp. 12-13, 21.

28. General Accounting Office, Draft Report: Army Training: Comprehensive Strategy Would Provide Basis for Deciding Land Needs, 21 December 1990. The final report entitled *Various Factors Create Uncertainty About Need for More Land*, April 1991, does not specifically address the NTC and is much more cautious in its approach to military land acquisition efforts. The draft was the version used by the task force.

Government, together with the granting to the new government the authority to regulate federal property and create new states, went far in assuring the success of the new federal government. Legislation such as the Territorial Ordinance of 1784 and the Northwest Ordinance of 1787 established the system of surveying of lands for disposal and set up a system for development of territorial governments leading to statehood. In their basic form, those approaches to federal land management still existed in the 1980s and 1990s. But over the years many conflicts had developed and recurred. What use should the government make of public lands? Should they be retained in federal ownership or disposed of to private ownership or given to the new states created out of them? Federal land laws seesawed between laws creating federal land programs such as national parks and laws disposing of federal lands to raise money or encourage settlement such as the Homestead Act of 1862. The twentieth century saw a stronger sentiment for a policy of retention of public lands in federal ownership, much to the regret of western members of Congress who hoped to see federal lands relinquished to the states.[29]

In the environmental realm, the last half of the twentieth century also saw changes in policy. For many years, from time to time, state and federal legislatures had approved bills related to protection of specific areas and animal and plant species. But beginning in the mid- to late- 1950s, such legislation became more frequent and tended to affect larger areas and to apply at a national level. One of the first acts that might have affected the NTC land acquisition program was the Interchange Act of 26 July 1956.[30] That legislation authorized the transfer of National Forest lands to management by the Department of Defense in return for a corresponding transfer of military lands to the Department of Agriculture. The land exchanged did not have to be contiguous or located in the same state. NTC planners had made clear early on that land that did not provide an extension of maneuver space adjacent to the existing Fort Irwin would not suit the training center's needs.

In February 1958, Congress had passed what came to be known as the Engle Act, after its sponsor Representative (later Senator) Clair Engle of California. For many years public lands had been converted into military bases or otherwise allocated for military uses by administrative actions alone. Many such actions had been taken as the United States was drawn into World War II. However, the period after World War II differed from

29. (1) Samuel Eliot Morison, *The Oxford History of the American People* (New York: Oxford University Press, 1965), pp. 297-98. (2) Backiel, pp. 5, 8-9, 19.

30. 16 U.S.C. 505a, 505b.

previous postwar eras as the nation remained on a near-war footing. As a result, there was increasing public concern that many military allocations of public lands—originally seen as temporary measures to respond to wartime needs—seemed likely to become permanent, thus excluding other possible uses. The Engle Act provided that in peacetime, no Department of Defense request for withdrawal of more than 5,000 acres of public lands could be granted without an act of Congress.[31] Obviously, the NTC's request for vast acreage, whether it was located south of the current Fort Irwin or east and west of it, would require an act of Congress. That requirement in turn, meant that the traditional administrative actions and "gentlemen's agreements" between the Secretaries of the Interior or Agriculture and the Secretary of Defense were no longer possible.

Two other pieces of legislation also helped to define the parameters of the NTC's search for more acreage. The Wilderness Act of 1964 established the National Wilderness Preservation System. The act defined "wilderness" as roadless federal land which was relatively untouched by human activity. The act designated certain Forest Service Lands as wilderness and required study of additional National Forest and National Park lands to determine if they qualified as additions to the system. Land was added to the system by acts of Congress. Generally, the construction of buildings or roads, logging, and the use of motorized vehicles were prohibited. Five years later, the National Environmental Policy Act of 1969 required a public process and an Environmental Impact Statement before the military's requests for transfer of jurisdiction on public lands could be honored.[32]

Perhaps the most influential legislation with regard to the military acquisition of public lands and the management of the California Desert was the Federal Land Policy and Management Act, or FLPMA. In 1976, after many studies and deliberations in three Congresses, that comprehensive public lands law was enacted. Designed to bring together a myriad of inefficient and inconsistent laws, the FLPMA finally established that public lands would be retained in federal ownership. Important to the NTC expansion effort were the provisions that management would be on the basis of multiple-use and that the public would be involved in decision-making

---

31. P.L. 85-337, 72 Stat. 27. The Engle Act was renewed in 1986.

32. The largest portion of federal land in the United States was managed by the Bureau of Land Management, the Fish and Wildlife Service, or the National Park Service, all in the Department of the Interior; the National Forest System was managed by the National Forest Service of the Department of Agriculture; almost 20 million acres of federal land not managed by the foregoing agencies was managed by the Department of Defense, making it the fifth largest federal land manager. Backiel, Introduction, pp. 35-36.

The Engle Act did not apply to the National Guard, which as a state entity was authorized to use public lands in the same way as any other state agency.

through a land-use planning process. The 1976 act also provided for the establishment of a California Desert Conservation Area. Specifically, the FLPMA directed the BLM to develop a plan to manage the California Desert Conservation Area under a multiple-use concept. The new law also made BLM-managed lands within the Mojave Desert subject to review and designation as "wilderness." [33]

To execute the provisions of the FLPMA with regard to the California Desert Conservation Area, President Jimmy Carter asked his Secretary of the Interior, Cecil Andrus, to appoint a Desert Advisory Council to carry out the mandated public planning process. The fifteen-member council spent four years drafting a management plan for the desert. After more than fifty public hearings and 40,000 public comments, Andrus approved the California Desert Protection Plan in 1980. The plan provided for multiple-use (vehicles, mining, power lines, ranches, etc.) and resource protection. It also placed more than half the desert in "limited use" categories. At the time of its passage, off-road vehicle groups, the mining association, and some local governments were so stringently opposed to the California Desert Protection Plan that they filed suit to enjoin Secretary Andrus from signing the plan. The unsuccessful suit was not decided for four years. Generally, however, while none of the groups on either side of the environmental debate were entirely happy with the plan, most considered it balanced. It was that plan that opponents of the Cranston California Desert Protection Act (CDPA) and supporters of the withdrawal of public lands for military use would accuse CDPA supporters of attempting to bypass.[34]

The Cranston bill of 1986, and a companion bill introduced in the House of Representatives by Representative Richard H. Lehman, also a Democrat from California, did not at first appear to have a direct effect on the NTC land acquisition program, although it was the most sweeping land conservation measure to come before Congress since the Alaska National Interest Lands Conservation Act of 1980. The CDPA, if passed, would have declared some seventy sites in the desert—approximately 2.5 million acres—as "wilderness," an often controversial designation because, as noted above, wilderness areas had strict management and use limitations. Wilderness was "undeveloped Federal land . . . without permanent improvements." Generally, neither buildings nor roads were allowed. The CDPA would

---

33. (1) Federal Land Policy and Management Act, 90 Stat. 2743, 43 USC, 1701 et seq. (2) P.L. 88-577, 78 Stat. 890, 16 U.S.C. 1131 et seq. 3 Sep 64. (3) Siehl, *Natural Resources*, p. 42.

34. U.S. Congress, *California Desert Protection Act of 1993—Hearings before the Subcommittee onf Public Lands, National Parks and Forests of the Committee on Energy and Natural Resources, United States Senate* (Washington, D.C., 1993) 27-28 Apr 93, 103 Cong, 1st sess.

also greatly expand the Death Valley National Monument and the Joshua Tree National Monument and make both sites National Parks, henceforth to be administered by the National Park Service instead of the Bureau of Land Management. Perhaps the most controversial provision of the proposed legislation was the creation of a huge "East Mojave National Park" west of the California-Nevada border, south of California interstate Route 15 and north of interstate Route 40. The area was generally southeast of Fort Irwin. (Map 1) In 1986, the East Mojave area was designated a National Scenic Area. National Park status would, again, mean National Park Service management and severe restrictions on a favorite recreation area of hunters and off-the-road vehicle enthusiasts. However, at that time the bill seemed to have no threat for the NTC expansion, because none of the seventy some sites proposed as wilderness or National Parks lay directly south of Fort Irwin in the area the NTC wished at that time to annex.

That is not to say that there was no connection between the NTC's efforts to expand and the California Desert Protection Act. Concurrently with the perennial debates over the CDPA, the Senate and House of Representatives began "oversight" hearings on the military use of public lands.[35] Both issues were concerned with the use and disposition of federal lands. Opponents of the CDPA often used as a major argument the importance of national security and the need for additional training land for the military forces. In addition to the NTC's proposed land acquistion, the Navy's Chocolate Mountains Aerial Gunnery Range in southern California and its China Lake Naval Weapons Center west of Death Valley, had petitioned for renewal of their withdrawal of land from public use. Proponents of the CDPA pointed to the military requests as examples of the importance of redesignating the subject sites as wilderness, to prevent further damage from training exercises. The debates featured some strange, certainly nontraditional, alliances. Some ranchers and miners joined utility companies to support the military view. Other strange bedfellows were ranchers who joined environmentalists against a common foe: the Pentagon. Supporters of multiple-use of federal lands, often supported single-use by the military as opposed to wilderness designations. Over time, the congressional committees heard thousands of hours of testimony on both the military requests and the CDPA. Some supporters complained the bill was too radical; others argued it did not go far enough. The bill changed in many minor ways during the debates, but generally remained the same—at least through 1992.

35. The debates in the House took place in the Subcommittee on National Parks and Public Lands, Committee on Interior and Insular Affairs.

The fate of the CDPA was a somewhat minor issue for Fort Irwin and the NTC—especially compared with the fate of the desert tortoise—until the training center abandoned efforts to obtain the land south of the installation which served as a habitat for large numbers of the animals. As previously discussed, the NTC then focused its efforts on acquiring adjacent land to the southeast, east, and west. Then, passage or lack thereof, of the CDPA became a major issue for Army and NTC officials, because three of the areas identified for wilderness designation were in the area the Army wanted—the Soda Mountains, the Avawatz Mountains, and the South Avawatz Range. At that point, the Army had not formally petitioned for additional land—primarily because until the fate of the bill was known, NTC planners did not know which of four alternatives to select. Wilderness designations would mean, among other things, prohibition of mechanized vehicles. The bill would also move the southern border of Death Valley "National Park" directly adjacent to the NTC's northernmost boundary, thereby eliminating the safety buffer provided by the Owlshead Mountains during aerial bombing exercises. Moreover, the possibility that the bill might pass both houses of Congress increased. From the beginning, Democrats had tended to favor the bill, while Republicans opposed it. Although the House of Representatives had passed the CDPA on two occasions (1991 and 1992), it either was not taken up in the Senate or failed to pass. One reason for its failure was the opposition from California's other senator, Republican John Seymour. But in the 1992 elections, Democrats Diane Feinstein and Barbara Boxer replaced Cranston and Seymour. Environmentalist groups, the strongest supporters of the bill, saw a chance finally to pass it.[36]

Meanwhile, the National Training Center's efforts to obtain more maneuver area encountered another roadblock. By 1990, the military services had identified and requested use of a total of 4.6 million acres of additional public lands in California, Colorado, Idaho, Montana, Nevada, Utah, and Washington. The Bureau of Land Management had those requests under review when the public outcry against the withdrawal of more land from the public domain became quite loud, especially in the western states where the land in question was located. There appeared to be a belief

36. The strongest support came from the Sierra Club, the California Desert Protection League, the Wilderness Society, the National Wildlife Federation, the Federal Fish and Wildlife Service, and the Audubon Society. Opposed to the bill were the National Outdoors Coalition, the National Outdoor Federation (off-highway vehicle devotees), The California Desert Coalition, California's electric and gas utility companies (which also opposed the expansion of Fort Irwin), most Chambers of Commerce, the National Rifle Association, several congressmen from the California desert area whose districts were generally fearful of loss of income, and, of course, the Department of Defense.

among many that since the services were downsizing and bases were being closed, there was no need to grant the military more training land. Also at issue were low-altitude flights over recreational areas such as National Parks. To address those concerns, the House of Representatives' Subcommittee on National Parks and Public Lands of the Committee on Interior and Insular Affairs held an oversight hearing, beginning on 3 January 1990. Testimony came from every quarter, and every request from the Department of Defense for use of public lands, including the Fort Irwin project, received close scrutiny. Representatives of the Department of Defense explained that a mechanized infantry battalion needed more than 80,000 acres to practice maneuvers, compared to 4,000 acres during World War II. Environmentalists and conservationists, the most vocal element at the hearings, were not convinced. One commentator wrote for the *Washington Post* that the Pentagon was conducting "a land grab that ought to be called an invasion."[37]

The hearing appeared to demonstrate that the Department of Defense lacked a coordinated way to make decisions about obtaining land for military uses. The Bureau of Land Management proposed that the Department of Defense establish a single point of contact for all federal military actions involving public lands. At least partly in response to that hearing and to increasing criticism, on 13 September 1990, Deputy Secretary of Defense, Donald J. Atwood, Jr., placed a moratorium on Department of Defense land acquisition. The memorandum establishing the moratorium stated:

> The Secretary of Defense and I want to change fundamentally the way the Department of Defense acquires land in the future and to place a moratorium on acquisitions that are currently in process. As we reshape our forces and close or realign bases, the Department must ensure that we propose the acquisition of land only where there is a clearly demonstrated need.

Atwood's memorandum also prohibited commanders from making public any major proposal for land without approval of the Secretary of Defense or himself. Follow-on guidance included addressing alternatives, particularly the potential for using land available from a sister service before new acquisitions were requested. The new sensitivity among senior officials to public concern about the way the military services did business,

---

37. (1) Oversight Hearings, Public Lands, 3 Jan 90. (2) Colman McCarthy, "The Pentagon's Land Sighting," *Washington Post*, 21 Jan 90.

thus put the NTC and Fort Irwin another step further away from acquiring additional acreage.[38]

An article which appeared in the *Los Angeles Times* in December 1990—during the buildup preceding the Persian Gulf Crisis— was indicative of the problems the Army faced in attempting to expand the maneuver area at Fort Irwin. The headline read: "Opponents of Earlier Proposals Charge a Trumped-up Land Grab is Under Way." After a brief explanation of local opposition to the project and the role of the desert tortoise, the article continued:

> With the Army contending it needs more room quickly to meet the troop training demands of the Persian Gulf crisis, opponents of the expansion say the conflict is being used as an excuse by the military to gain control over more land.

The story was apparently prompted by Fort Irwin garrison commander Col. Hal Fuller's suggestion that the Army might be able to acquire a smaller but immediate 125,000-acre expansion to accommodate a stepped-up training schedule. His reference was to the training of Army National Guard round-out brigades at the NTC, a subject addressed at length elsewhere in this study. The idea of an emergency expansion was quickly dropped when the BLM declared that there was not enough time to prepare the environmental assessment required before the mandatory congressional approval could be obtained. The Persian Gulf crisis did, however, somewhat improve the Army's case. According to the BLM, before Iraq invaded Kuwait on 2 August 1990, the mail was running 150 to 1 against the Army's land acquisition proposal; after the military buildup began, the negative letters outnumbered the positive 10 to 1.[39]

While the Department of Defense struggled with new guidelines for the acquisition of public lands for military use, the California Desert Protection Act reappeared on the floor of the House and Senate on a regular basis. The actors occasionally changed, but the arguments did not, that is not until Operation Desert Storm and the 1992 presidential elections. During the numerous hearings on the CDPA, more than a thousand witnesses

---

38. (1) Memo, Atwood to distr, 13 Sep 90, subj: Land Acquisition in the United States. (2) United States General Accounting Office, Report to the Honorable Nancy Landon Kassebaum, U.S. Senate, Army Training: Various Factors Create Uncertainty About Need for More Land, April 1991, pp. 41-42. As another follow-on action, the Department of the Army revised Training Circular 25-1, Training Land, to reflect the new regulations. The older version was eleven years old.

39. Kenneth Reich, "Iraq Crisis Cited in Push to Extend Desert Army Base," *Los Angeles Times*, 3 Dec 90.

testified or offered statements. Some of the testimony concerned only the desert protection bill; some concerned only the proposed expansion of Fort Irwin and actions dealing with other military facilities in the California desert;[40] some addressed both issues. But, without exception, participants in the debate who spoke to both issues and supported the California Desert Protection Act, opposed the withdrawal of land from the public domain for the Army's use at Fort Irwin. And, predictably, the issue of the desert tortoise was a frequent subject.

Increasingly, in hearings concerning military use of public land, assertions were made that—with regard to the environment—the military should be held to the same standard as all other users of public and private land. Such sentiments led, in 1992, to passage of the Federal Facilities Compliance Act, which meant that installations were no longer shielded from the necessity to comply with state and local regulations, some of which were more stringent than federal regulations. Such legislation put Army trainers on notice that the lack of sound natural resource management might jeopardize the opportunity for troops to train, and for the military to obtain the additional land needed—at the NTC or elsewhere. The changing policy climate, in addition to the debates over military use of public lands, military overflights, and the efforts of CDPA advocates to made the desired land adjacent to Fort Irwin a part of the protected desert area, further complicated the issue of NTC land acquisition. The basic question seemed to be: How do you deal with endangered species, hazardous waste, clean air and water, and the protection of natural, cultural, and historical resources, without compromising good training?[41]

Examples of the testimony of only a few of those who sought to influence the Senate and House committees on the entangled set of issues that would inform the NTC's efforts to obtain more land, can serve to illustrate the wide variety of viewpoints brought to bear. The debates are also indicative of the type of opposition the Army faced. Not all those who testified or petitioned either the Senate Committee on Energy and Natural Resources or the House of Representatives Committee on Natural Resources—or both—directly addressed the expansion of Fort Irwin;

---

40. There were five major U.S. military facilities in the California Desert Protection Area: Fort Irwin/NTC; China Lake Naval Weapons Center; the Chocolate Mountains Aerial Gunnery Range (Navy); the U.S. Air Force's Edwards Air Force Base; and the Marine Corps' Twentynine Palms Air Ground Combat Training Center. The renewal of the agreement between the Interior and Defense Departments for use of the China Lake and Chocolate Mountains sites was also an issue during the debates.

41. (1) TRADOC ACH, CY 92, pp. 113-14. (2) George H. Siehl, "Natural Resource Concerns in Military Training," *National Defense*, March 1993, p. 8.

however, supporters of the CDPA implicitly opposed the loss of potential wilderness areas to NTC maneuvers. Most CDPA advocates also opposed "single-use" withdrawal of public land for military use and military overflights of national parks and wilderness.

The U.S. Army's interest in the California Desert Protection Act-NTC struggle was represented by Robert A. Stone, Department of Defense Deputy Assistant Secretary for Installations. In his remarks to the Senate committee, Stone explained the need for the NTC to acquire additional acreage:

> [Without more land] technology would change, the land and airspace required for testing and training would not. We would fail in the most important obligation we have: to prepare young Americans to survive in combat. We also need flexibility to expand, not only to meet current requirements, but also to keep pace as the technical complexity of our units, weapons, and tactics improve.[42]

Col. Hal Fuller, garrison commander at Fort Irwin, in response to a similar question from Idaho senator Larry E. Craig, answered:

> We have some concerns about the designation of wilderness or wilderness study areas. In particular, our mission has become very important in the last few years. Over 500,000 soldiers have been trained at the National Training Center, and had a significant impact in the recent engagement in Southwest Asia. . . . We need to train as we are going to fight in the battles of tomorrow. We cannot train for the battle of yesterday.[43]

From the time Senator Cranston introduced the first California Desert Protection Act bill in 1986, one of the NTC's staunchest defenders was United States Representative Jerry Lewis, a Republican who represented San Bernardino County, in which Fort Irwin was located. It had been Lewis who as much as anyone else deserved credit for "saving" the NTC concept before the center became a reality. When, in 1979, the California

---

42. U.S. Congress, *Hearings before the Subcommittee on Public Lands, National Parks, and Forests of the Committee on Energy and Natural Resources*, U.S. Senate, 10 Nov 92, 102d Cong, 2d sess, p. 51. [Hereafter cited as Senate Hearings, 2d sess, 1992.] Advising Stone on behalf of the Army were Brig. Gen. William A. Navas, Deputy Director of the Army National Guard and Brig Gen. Larry D. Lehowicz, Director of Training in the Office of the Deputy Chief of Staff for Operations and Plans.

43. Ibid. p. 57-58.

Resources Agency succeeded in having the House of Representatives Appropriations Committee withdraw all funding for the NTC on grounds that the Army had not satisfied the state's concern for adverse environmental impacts, Lewis had convinced the California Assembly to pass a resolution unanimously endorsing the establishment of the NTC at Fort Irwin. Funding was then reinstituted and planning for the NTC resumed.[44]

Lewis' appeals to the committee during their hearings on the future of the California desert, addressed both the California Desert Protection Act—which he opposed—and the NTC's acquisition of additional land—which he favored. He accused supporters of the bill of bypassing the Federal Land Policy and Management Act of 1976, which mandated a public planning process. Of the Senate and House bills of 1993, Lewis told the committees:

> H.R. 518 and its Senate counterpart S. 21 were originally drafted and introduced by an elite few behind closed doors with little public input. . . . [Their actions] violate the public trust of those who committed years to the public process that culminated in a reasonable and comprehensive desert plan. In the eyes of this Member and a solid majority of my southern California constituents who live in, work in, and love the desert, such a violation is not only unbelievable but totally unacceptable.[45]

Of the NTC's expansion into a part of the desert which he represented, Representative Lewis once again championed the training center:

> Several issues regarding military use of the desert must be addressed and permanently settled prior to the enactment of any desert legislation. . . . Much of our success in Operation Desert Shield and Desert Storm can be directly attributed to the National Training Center at Fort Irwin. General Schwartzkopf had this to say about the NTC. "I commanded the 24th Mechanized Division during seven different rotations at Fort Irwin. It is the best investment

---

44. An account of the drafting of an Environmental Impact Statement and its approval may be found in Chapman, *National Training Center*, pp. 30-32.

45. U.S. Congress, *Hearings Before the Subcommittee on Public Lands, National Parks, and Forests of the Committee on Energy and Natural Resources on H.R. 518 and 880*, U.S. House of Representatives, 15 Jun 93, (Washington D.C., 1993), 103d Cong, 1st sess, p. 56. [Hereafter cited as H.R. Hearings, 1st sess, 1993.]

> the Army has made in the 35 years I have been in the Army. The reason we did so well in Desert Storm and Desert Shield is because almost every commander we had over there had some kind of involvement in the NTC."[46]

The National Training Center and Fort Irwin found some unwitting—and unlikely—allies in their opposition to the CDPA: ranchers concerned with the loss of leases on inexpensive public grazing land; miners concerned for the loss of claims; homeowners who clung to their existence far from Los Angeles; hunters and the National Rifle Association; local Chambers of Commerce fearful of the loss of jobs and businesses; off-highway vehicle enthusiasts; and the State Highway Department of California (CALTRAN) who resisted the loss of sand and gravel pits within the proposed wilderness. Of course, some of these groups also opposed the withdrawal of public land for military use or the renewal of existing withdrawals. Opposition to the CDPA also came from California's governor, Pete Wilson, who as a U.S. Senator had successfully opposed Senator Cranston's bill. (Concurrently, Wilson took credit for the emergency listing of the desert tortoise as "endangered").[47]

The California utility companies were a special case in that they generally opposed both the California Desert Protection bill and the expansion of Fort Irwin. Los Angeles mayor Tom Bradley, as well as the utility companies themselves, expressed their concern about the current and future effects on the huge power lines that ran directly from Hoover Dam to Los Angeles, as previously noted. Estimates as to how much of Los Angeles' power was supplied in that manner ranged from 65 percent to 80 percent. Company personnel were also concerned about the future of the Los Angeles Aqueduct System which supplied up to 80 percent of Los Angeles' water. The position of the Los Angeles Department of Water and Power on the expansion of Fort Irwin was relatively clear:

---

46. Hearings Before the Subcommittee on Public Lands, National Parks, and Forests of the Committee on Energy and Natural Resources, U.S. Senate, 103rd Cong., 1st sess, p. 120. [Hereafter cited as Senate Hearings, 1st sess, 1993.]

47. (1) Statement of Edward G. Heidig, Director, California Department of Conservation, Sacramento, CA. (2) Ltr, William T. Archy, Senior Vice President, Policy and Congressional Affairs, Chamber of Commerce of the United States of America to Bruce F. Vento, Chairman, Subcommittee on National Parks, Forests, and Public Lands, Committee on Natural Resources, U.S. House of Representatives (in H.R. Hearings, 1st sess, 1993, pp. 525-26). The testimony of those persons representing the mining interests is in Senate Hearings, 2d sess, 1992, pp. 151-52. When asked how much it had cost to improve his mine relative to the desert tortoise, one owner replied that it had cost $1.3 million and at first it was thought that three had been sighted, but it turned out to be the same one.

> In the event a proposal . . . emerges to provide for the expansion of Fort Irwin, the city respectfully requests that statutory language be included which: (1) protects the city's ability to operate, maintain, and construct transmission lines in the affected utility corridors; (2) requires the military to assume all liability for damage to transmission line facilities resulting from its military operations; (3) requires the military to pay for any safety or other measures needed to protect the transmission line facilities from military activities; and (4) maintains BLM [Bureau of Land Management] management authority regarding the affected utility corridors.[48]

Los Angeles officials were also concerned about natural gas pipelines that generally paralleled the power lines across the Mojave. Compliance with air quality legislation necessitated a greater use for natural gas for the city's electric plants, rather than the use of more pollutant fuels. That need for natural gas coupled with the potential of increased demand for electricity, led the city to watch carefully any activity that might threaten current or future pipelines. Despite those concerns on the part of the city's utility companies, the Los Angeles City Council took official action to endorse the CDPA.[49]

The most vocal supporters of the California Desert Protection Act—and often the biggest foes of NTC expansion—were California's various environmentalist groups. A principal concern of those groups was the conversion of lands administered for multiple-use and conservation to military training which they viewed as single-use of the lands that was insensitive to all other resource values. The testimony of the Legislative Director of the Sierra Club and spokesperson also for the California Desert Protection League is fairly typical:

> I am pleased to offer our unequivocal support for this legislation. I urge you to move this bill forward expeditiously. It is time and beyond for Congress to provide a statutory framework for the protection and management of the

48. Senator Alan Cranston to Mayor Tom Bradley, 26 Jan 89, appended to Senate Hearings, 2d sess, 1992, p. 286. The utility corridors along Interstate Route 10 were the result of an agreement between the BLM and the State of California concerning the use of public lands.

49. (1) Senate Hearings, 2d sess, 1993. (2) Letter, James F. Seeley to Representative Bruce F. Vento, 7 Jun 93, Appendix to Senate Hearings, 27-28 Apr 93, 103rd Cong., 1st sess., p. 498.

> California Desert. It is time for Congress to choose a future for this area. . . . [The desert] is not vast enough to withstand indefinitely the kind of rough, uncontrolled use it has seen over the past several decades.[50]

As the debate continued, environmental groups increasingly accused the military of "trashing" the California Desert, especially at the NTC.

The Legislative Story

As the 1980s gave way to the 1990s, the California Desert Protection Act was, as already noted, introduced in both houses of Congress yearly, only to go down to defeat. In November 1991, the House of Representatives passed the CDPA, which had been introduced by Representative Richard Lehman, a Democrat from Riverside, Calif. On that bill, Senate action stalled at the hands of GOP opposition. In 1992, Cranston and Lehman once again introduced their bills in the Senate and House, respectively, with only minor changes. Once again the House passed the CDPA despite President Bush's threat to veto it. That time, in the Senate, the Bush administration introduced its own bill. The administration bill was based on the Federal Land Policy and Management Act of 1976, and would designate 2.1 million acres as BLM administered wilderness and add 110,000 acres to Death Valley and Joshua Tree National Monuments—a far cry from the 5.5 million acres that would change status under the Cranston bill. Neither bill was approved. The administration bill appears to have been a smoke screen. Senator John Seymour, a Republican appointee and strong opponent of the CDPA, bottled up the bill in committee by invoking a parliamentary procedure that prohibited a committee from meeting for longer than two hours after the Senate convenes without a unanimous floor vote to waive the provision. The committee had to recess without a vote when Seymour objected five minutes past the two-hour limit.[51]

---

50. (1) Siehl, p. 19. (2) House Hearings, 15 Jun 93, 103rd Cong, 1st sess, p. 171-72. The California Desert Protection League was a coalition of more than a hundred conservation, civic, and educational organizations.

51. (1) Senate Hearings, 29-30 Apr 92, 102d Cong, 2 sess, passim. (2) Glenn F. Bunting, "Desert: Maneuver by Seymour Bottles Up Bill in Committee," *Los Angeles Times*, 6 Aug 92. The House Bill was H.R. 2929; the Cranston bill was S. 21; and the administration bill was S. 2393. The bill had been linked to another highly controversial bill (Republican-sponsored) that would free the government from some environmental restrictions when logging national forests in the Pacific Northwest.

There the matter stood as the November 1992 national elections approached. National Training Center planners were no closer to acquiring more land than they had been in 1986. And formal procedures still had to wait, it appeared, until the status of the desired acreage was decided by the fate of the CDPA. At that point, matters regarding the NTC took a rather dramatic turn. In the fall elections, a former San Francisco mayor and a Democrat, Diane Feinstein, defeated Senator John Seymour; Barbara Boxer, also a Democrat, took over what had been Senator Alan Cranston's seat. Feinstein, with Boxer's assistance, took over as sponsor of the CDPA bill in the Senate. She proved to be as determined to pass the CDPA as Seymour had been determined it be defeated. She was cautiously optimistic and had reason to be. In the same elections William "Bill" J. Clinton, a Democrat, defeated George H. W. Bush, the Republican incumbent, for the Presidency. Clinton endorsed the CDPA bill; his Secretary of the Interior, Bruce Babbitt, was an avid supporter and testified for the bill before both Senate and House committees. Bush, it will be remembered, threatened a veto should the bill pass both houses.[52]

Aware of the rocky road the bill had had in the Senate in the past, Feinstein took steps to diffuse as much of the opposition as possible. The Department of Defense was prominent among the bill's opponents. To counter Department of Defense opposition, especially with regard to the proposed expansion of Fort Irwin, the three areas targeted as wilderness and located within the potentially expanded maneuver area, were removed from the bill or altered. The South Avawatz Mountains were entirely removed as a designated wilderness area; the wilderness boundaries were changed for the Avawatz Mountains and the Soda Mountains. All three areas were removed from "wilderness study" status until the Fort Irwin land acquisition issue was settled. In addition, boundaries were changed for proposed wilderness areas between Fort Irwin and the Marine Corps Training Center ("Twenty-Nine Palms"), to allow for the building of a transportation corridor ("tank road"), should the services choose to do so to provide for testing of command and control procedures. Language was changed to assure continued military overflight over public land and national parks. The buffer zone between Death Valley and the NTC live-fire range remained intact.[53]

---

52. (1) Senate Hearings, 27-28 Apr 93, 103d Cong., 1st sess. (2) House Hearings, 15 Jun 93, 103d Cong., 1st sess.

53. In 1993, the Senate combined the bill concerning military overflights with the bill regarding the CDPA as S. 21. The House held joint hearing on H.R. 518, the Wilderness Act, and H.R. 880, The Withdrawal of Federal Lands for Military Purposes. In addition to concessions to the military, the 1993 Feinstein bill also included language to ensure protection of mining claims and utilities. The U.S. Navy's use of China Lake Naval Weapons Center and the Chocolate Mountains Aerial Gunnery Range was confirmed.

At that point, Senator Sam Nunn, a Democrat from Georgia and Chairman of the Armed Forces Committee, who had championed the military's efforts to maintain training land and air space, agreed to co-sponsor the CDPA legislation.[54]

While the concessions to the military were the major reasons for the Defense Department's abandonment of its objections to the California Desert Protection Act, two other forces also played a part. First, Clinton's appointees replaced the Bush appointees, referred to often in the hearings as the "old Defense Department." Second, as previously noted, the military services, and especially the Army, began placing unprecedented emphasis on environmental issues.[55] During the hearings on the expansion of Fort Irwin, as well as other military matters, much of the testimony on behalf of the Department of Defense was given by Sherri Wasserman Goodman, Deputy Under Secretary of Defense for Environmental Security, a very new position. When Goodman testified during the Senate hearings in late April 1993, she had been on the job one day. She set the tone for the "new" Department of Defense:

> The old Department of Defense opposed the California Desert Protection Act on the grounds that the emphasis on protecting the desert could not be reconciled with our military activities there. However as we change our military focus to meet new threats, I am here today to support S. 21 . . . and to tell you that the President, Vice President, and Secretary [of Defense] [Les] Aspin believe that environmental security is vital to our national security.[56]

During House hearings six weeks later, when asked by Representative James V. Hanson, Republican of Utah, whether the Army would be careful not to run over desert tortoises, Goodman replied "That certainly is correct, yes."[57]

Thus the 103rd Congress took up the California Desert Protection Act one more time, while the Army and the NTC awaited the fate of

---

54. (1)Senate Hearings, 27-28 Apr 93, 103rd Cong, 1st sess, p; 131-32.

55. For an account of the U.S. Army's environmental activities in the early 1990s, see TRADOC ACH, CY 91, p. 153; CY 92, pp. 113-15; CY 93, pp. 179, 186, pp. 126-27.

56. Senate Hearings, 27-28 Apr 93, 103rd Cong, 1st sess, p. 148.

57. House Hearings, 15 Jun 93, 103rd Cong., 1st sess, p. 164.

their land acquisition project. In 1993, the legislation passed the House of Representatives by an overwhelming majority. The House bill, unlike the Senate bill left the three areas east of the present Fort Irwin that the NTC desired, in "wilderness study" status. The Army objected that such a provision was almost as detrimental to its interests as a "wilderness" designation. At the end of 1993, the Senate version of the bill, which had seen numerous changes had not reached the floor. After eight years of attempting to satisfy the Fish and Wildlife Service concerning the future of the desert tortoise, changes in plans for expansion to avoid the tortoise's habitat, debates over military use of public land and overflights, increasing concerns within and outside the Army regarding environmental issues, and uncertainty as to how to proceed until the CDPA was either passed or abandoned, the NTC was no closer to achieving expansion of Ft. Irwin's force-on-force maneuver area.[58]

58. Senate Hearings, 27-28 Apr 93, 103rd Cong. 1st sess, pp 114, 132.